Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	18	jp-2002264513-$.did. or jp-2001199166-$.did. or jp-2000336443-$.did. or jp-2000103160-$.did. or jp-2000076702-$.did. or jp-11279752-$.did. or jp-11254833-$.did. or jp-11070737-$.did. or us-5882493-$.did.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 09:58

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	18	jp-2002264513-$.did. or jp-2001199166-$.did. or jp-2000336443-$.did. or jp-2000103160-$.did. or jp-2000076702-$.did. or jp-11279752-$.did. or jp-11254833-$. did. or jp-11070737-$.did. or us-5882493-$.did.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:31
L2	1075	(mn or manganese) same (((te or tellurium) near8 (sb or antimony)) near8 (ag or silver))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:33
L3	20	(mn or manganese) same (inagsbte or aginsbte)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:33
L4	524536	((optical or laser or information) near5 (medium or media or disk$1 or disc$1))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:34
L5	234	(l2 or l3) and l4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:34
L6	114	((l2 or l3) same phase) and l4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:36
L7	51	l6 and @ad<"20020911"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:36
L8	135	l5 and @ad<"20020911"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:36
L9	126	((l2 or l3) and (phase same l4))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:36

L10	74	l9 and @ad<"20020911"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:36
L11	85	l7 or l10	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/02/03 10:37

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 NEWS  5  DEC 14      2006 MeSH terms loaded for MEDLINE file segment of TOXCENTER
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 NEWS  7  DEC 21      IPC search and display fields enhanced in CA/CAplus with the
                      IPC reform
 NEWS  8  DEC 23      New IPC8 SEARCH, DISPLAY, and SELECT fields in USPATFULL/
                      USPAT2
 NEWS  9  JAN 13      IPC 8 searching in IFIPAT, IFIUDB, and IFICDB
 NEWS 10  JAN 13      New IPC 8 SEARCH, DISPLAY, and SELECT enhancements added to
                      INPADOC
 NEWS 11  JAN 17      Pre-1988 INPI data added to MARPAT
 NEWS 12  JAN 17      IPC 8 in the WPI family of databases including WPIFV
 NEWS 13  JAN 30      Saved answer limit increased
 NEWS 14  JAN 31      Monthly current-awareness alert (SDI) frequency
                      added to TULSA

 NEWS EXPRESS  JANUARY 03 CURRENT VERSION FOR WINDOWS IS V8.01,
               CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
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               V8.0 USERS CAN OBTAIN THE UPGRADE TO V8.01 AT
               http://download.cas.org/express/v8.0-Discover/

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                                                        ENTRY    SESSION
FULL ESTIMATED COST                                      0.21       0.21

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FILE COVERS 1907 - 3 Feb 2006  VOL 144 ISS 6
FILE LAST UPDATED: 1 Feb 2006  (20060201/ED)

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=> s us 2004-0053166/pn
L1            1 US 2004-0053166/PN
                (US2004053166/PN)

=> file reg
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                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     2.41       2.62

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DICTIONARY FILE UPDATES:   1 FEB 2006  HIGHEST RN 873294-13-4

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*                                                                    *
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=> tra rn l1
L2           TRANSFER L1 1- RN :       3 TERMS
L3            3 L2

=> s l3
L4            3 L2

=> d scan
```

```
L4   3 ANSWERS   REGISTRY  COPYRIGHT 2006 ACS on STN
IN   Antimony (8CI, 9CI)
MF   Sb
CI   COM


/ Structure 1 in file .gra /


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**


HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L4   3 ANSWERS   REGISTRY  COPYRIGHT 2006 ACS on STN
IN   Tellurium (8CI, 9CI)
MF   Te
CI   COM


/ Structure 2 in file .gra /


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**


HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L4   3 ANSWERS   REGISTRY  COPYRIGHT 2006 ACS on STN
IN   Manganese (8CI, 9CI)
MF   Mn
CI   COM


/ Structure 3 in file .gra /


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**


ALL ANSWERS HAVE BEEN SCANNED


=> s ag 5-6/mac
         36492 AG/MAC
        149627 5-6/MAC
L5        2188 AG 5-6/MAC
                 (AG/MAC (P) 5-6/MAC)

=> s In 4-5/mac
         18124 IN/MAC
        171646 4-5/MAC
L6        2253 IN 4-5/MAC
                 (IN/MAC (P) 4-5/MAC)

=> s sb 60-63/mac
         18178 SB/MAC
         71880 60-63/MAC
L7         758 SB 60-63/MAC
                 (SB/MAC (P) 60-63/MAC)

=> s te 27-31/mac
         10775 TE/MAC
         92083 27-31/MAC
L8         794 TE 27-31/MAC
                 (TE/MAC (P) 27-31/MAC)

=> s l5 and l6 and l7 and l8
L9          17 L5 AND L6 AND L7 AND L8
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                                                       ENTRY    SESSION
FULL ESTIMATED COST                                    20.80      35.17

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FILE LAST UPDATED: 1 Feb 2006  (20060201/ED)

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=> s l9
L10          22 L9

=> d all 1-22

L10  ANSWER 1 OF 22  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:508518  CAPLUS
DN   143:202815
ED   Entered STN:  15 Jun 2005
TI   Signal enhancement of super resolution enhanced near-field structure disk
     by silver nanoparticles
AU   Kurihara, Kazuma; Arai, Tomofumi; Nakano, Takashi; Tominaga, Junji
CS   Center for Applied Near-Field Optics Research (CAN-FOR), National
     Institute of Advanced Industrial Science and Technology (AIST), 1-1-1
     higashi, Tsukuba, 305-8562, Japan
SO   Japanese Journal of Applied Physics, Part 1: Regular Papers, Brief
     Communications & Review Papers (2005), 44(5B), 3353-3355
     CODEN: JAPNDE
PB   Japan Society of Applied Physics
DT   Journal
LA   English
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
AB   The authors propose a carrier-to-noise ratio (CNR) increment method for a
     super resoln. enhanced near-field structure (super-RENS) with silver
     nanoparticles.  The silver nanoparticles were fabricated by the RF
     magnetron sputtering method.  The mean diams. of the particles under
     as-deposited and 600.degree. C annealed conditions were evaluated as 5 nm
     and 15 nm, resp.  The light absorption peak of the silver nanoparticles
     was adjusted to a laser wavelength of 405 nm for an optical disk system.
     The silver nanoparticles showed a higher absorption characteristic when
     they were annealed at above 500.degree. C.  In the case of a recording
     mark size of 50 nm, the CNR enhancement of the super-RENS with the silver
     nanoparticles was evaluated as 11 dB.  This method using the silver
     nanoparticles provided a higher CNR increment in recording marks below the
     optical resoln. limit.
ST   super resoln enhanced near field optical disk silver nanoparticle; optical
     super RENS disk silver nanoparticle
IT   Nanoparticles
     Particle size
        (carrier-to-noise ratio increment method for super-resoln. enhanced
        near-field structure with silver nanoparticles)
IT   Optical ROM disks
```

Optical disks
(super-RENS; carrier-to-noise ratio increment method for super-resoln. enhanced near-field structure with silver nanoparticles)

IT 1314-98-3, Zinc sulfide, properties 7440-06-4, Platinum, properties 7631-86-9, Silica, properties ***689256-53-9*** , Antimony 61, indium 4.4, silver 6, tellurium 28.6 (atomic)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(carrier-to-noise ratio increment method for super-resoln. enhanced near-field structure with silver nanoparticles)

IT 7440-22-4, Silver, properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(nanoparticles; carrier-to-noise ratio increment method for super-resoln. enhanced near-field structure with silver nanoparticles)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Betzig, E; Appl Phys Lett 1992, V60, P2484 CAPLUS
(2) Betzig, E; Science 1991, V251, P1468
(3) Fuji, H; Jpn J Appl Phys 2003, V42, PL589 CAPLUS
(4) Fujii, M; Phys Rev B 1991, V44, P6243 CAPLUS
(5) Ichimura, I; Appl Opt 1997, V36, P4339
(6) Ichimura, I; Jpn J Appl Phys 2000, V39, P962 CAPLUS
(7) Kikukawa, T; Appl Phys Lett 2002, V81, P1
(8) Kim, J; Appl Phys Lett 2003, V83, P1701 CAPLUS
(9) Kuwahara, M; Jpn J Appl Phys 2004, V43, PL8 CAPLUS
(10) Shima, T; Jpn J Appl Phys 2004, V43, PL88 CAPLUS
(11) Tominaga, J; Appl Phys Lett 1998, V73, P2078 CAPLUS
(12) Tominaga, J; Nanotechnology 2004, V15, P1
(13) Yatsui, T; Proc SPIE 1999, V3791, P76 CAPLUS

AN 2005:450095 CAPLUS
DN 142:490449
ED Entered STN: 27 May 2005
TI Rewritable phase-change optical disks
IN Iwata, Kaneyuki; Tashiro, Hiroko; Ito, Kazunori
PA Ricoh Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G11B007-24
ICS B41M005-26; C22C012-00
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005135500	A2	20050526	JP 2003-369888	20031030
PRAI	JP 2003-369888		20031030		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005135500	ICM	G11B007-24
	ICS	B41M005-26; C22C012-00
	IPCI	G11B0007-24 [ICM,7]; B41M0005-26 [ICS,7]; C22C0012-00 [ICS,7]
	FTERM	2H111/EA04; 2H111/EA23; 2H111/EA32; 2H111/EA33; 2H111/EA40; 2H111/EA41; 2H111/FA12; 2H111/FA14; 2H111/FB09; 2H111/FB16; 2H111/FB17; 2H111/FB18; 2H111/FB20; 2H111/FB30; 5D029/JA01; 5D029/JC20

AB The title optical disk has a first protecting layer, a phase-change recording layer, a second protecting layer, and a reflective layer on a substrate, wherein the recording layer has 2.theta. = 0.8-1.0.degree. as the amorphous phase by x-ray diffraction anal. with Cu k.alpha. ray. The disk shows good characteristics on overwrite and storageability.

ST rewritable phase optical disk recording layer amorphous

IT Erasable optical disks
(phase-change; rewritable phase-change optical disks)

IT 648415-72-9 ***852158-68-0*** 852158-71-5 852158-74-8
RL: DEV (Device component use); USES (Uses)
(recording layer of rewritable phase-change optical disks)

L10 ANSWER 3 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:428675 CAPLUS
DN 142:472665
ED Entered STN: 20 May 2005
TI Optical recording disk showing improved recording capacity
IN Shima, Takayuki; Kuwahara, Masashi; Tominaga, Junji; Fukuzawa, Shigetoshi; Kobayashi, Tatsuhiro; Kikugawa, Takashi
PA National Institute of Advanced Industrial Science and Technology, Japan; TDK Corporation
SO Jpn. Kokai Tokkyo Koho, 24 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G11B007-24
ICS B41M005-26
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005129159	A2	20050519	JP 2003-364093	20031024
PRAI	JP 2003-364093		20031024		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005129159	ICM	G11B007-24
	ICS	B41M005-26
	IPCI	G11B0007-24 [ICM,7]; B41M0005-26 [ICS,7]
	FTERM	2H111/EA03; 2H111/EA22; 2H111/EA32; 2H111/FA01; 2H111/FA11; 2H111/FA21; 2H111/FB43; 2H111/FB45; 5D029/JA01; 5D029/JA04; 5D029/JB04; 5D029/JB05; 5D029/JB06; 5D029/JB21; 5D029/JB35; 5D029/JC05

AB The title optical recording disk includes an org. dye layer sandwiched between dielec. layers and an optical absorption layer sandwiched between dielec. layers. The org. dye is melted, sublimed, or decompd. upon laser beam irradn. to make recording marks. The org. dye is monomethine cyanine, porphyrin, or phthalocyanine, and the optical absorption layer contains Sb and/or Te.
ST optical recording disk org dye dielec layer
IT Optical disks
(optical recording disk showing improved recording capacity)
IT 1314-98-3, Zinc sulfide, processes 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(dielec. layer in optical recording disk showing improved recording capacity)
IT ***821794-57-4***
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(optical absorption layer in optical recording disk showing improved recording capacity)
IT 574-93-6, Phthalocyanine 51094-17-8, Tetrakis(4-hydroxyphenyl)porphyrin 103998-41-0
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(org. dye layer in optical recording disk showing improved recording capacity)

L10 ANSWER 4 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:395625 CAPLUS
DN 142:438751
ED Entered STN: 09 May 2005
TI Optical recording disk with increased recording capacity
IN Fukuzawa, Narutoshi; Kobayashi, Tatsuhiro; Kikukawa, Takashi
PA TDK Corporation, Japan
SO PCT Int. Appl., 39 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM G11B007-24
ICS B41M005-26
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other

Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005041181	A1	20050506	WO 2004-JP15818	20041026

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	US 2005169157	A1	20050804	US 2004-974552	20041027
PRAI	JP 2003-366810	A	20031028		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2005041181	ICM	G11B007-24
	ICS	B41M005-26
	IPCI	G11B0007-24 [ICM,7]; B41M0005-26 [ICS,7]
	ECLA	G11B007/24S
US 2005169157	IPCI	G11B0007-24 [ICM,7]
	NCL	369/275.100
	ECLA	G11B007/24S

AB An optical recording disk for recording/reproducing, as desired, data composed of a recording mark sequence including recording marks and blank regions even if the lengths of the recording marks and those of the blank regions among the adjacent recording marks are below the resoln. limit. The recording capacity of such an optical recording disk can be drastically increased. The optical recording disk has a multilayer structure comprising a substrate, a reflective layer, a third dielec. layer, a light-absorbing layer, a second dielec. layer, a metal recording layer, a first dielec. layer, and a light-transmitting layer sequentially formed in this order. When a laser beam is projected from the light-transmitting layer side, the metal recording layer deforms and/or transformed to form a state change region, and the second dielec. layer and the light-absorbing layer deform and/or transformed to form a state change region. Thus, a recording mark is created in the metal recording layer, the second dielec. layer, and the light-absorbing layer.

ST optical recording disk mark length

IT Erasable optical disks
(optical recording disk with increased recording capacity)

IT Polycarbonates, uses
RL: DEV (Device component use); USES (Uses)
(substrate of optical recording disk with increased recording capacity)

IT 1314-98-3, Zinc sulfide, processes 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(in dielec. layer of optical recording disk with increased recording capacity)

IT ***850880-65-8*** , Antimony 61.1, indium 4.4, silver 5.9, tellurium 28.6
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(in light-absorbing layer of optical recording disk with increased recording capacity)

IT 7439-95-4, Magnesium, processes 7440-06-4, Platinum, processes 7440-31-5, Tin, processes 7440-32-6, Titanium, processes 7440-66-6, Zinc, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(in metal recording layer of optical recording disk with increased recording capacity)

IT 348115-91-3, Copper 1, palladium 1, silver 98 (atomic)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(in reflective layer of optical recording disk with increased recording capacity)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

```
RE
(1) Tdk Corp; EP 1349158 A1 2002 CAPLUS
(2) Tdk Corp; JP 2002222541 A 2002 CAPLUS
(3) Tdk Corp; US 2003210642 A1 2002 CAPLUS

L10  ANSWER 5 OF 22  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:35031  CAPLUS
DN   142:123279
ED   Entered STN:  14 Jan 2005
TI   Optical recording disk showing enhanced C/N ratio and increased recording
     capacity
IN   Kikukawa, Takashi; Fukuzawa, Narutoshi; Kobayashi, Tatsuhiro
PA   TDK Corporation, Japan
SO   PCT Int. Appl., 29 pp.
     CODEN: PIXXD2
DT   Patent
LA   Japanese
IC   ICM  G11B007-24
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   WO 2005004132        A1    20050113    WO 2004-JP9186         20040630
         W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK,
             LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO,
             NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,
             TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
             AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
             EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
             SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
             SN, TD, TG
     JP 2005025842        A2    20050127    JP 2003-189274         20030701
PRAI JP 2003-189274       A     20030701
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
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 WO 2005004132   ICM    G11B007-24
                 IPCI   G11B0007-24 [ICM,7]
                 ECLA   G11B007/24
 JP 2005025842   IPCI   G11B0007-24 [ICM,7]; B41M0005-26 [ICS,7]
                 FTERM  2H111/EA03; 2H111/EA12; 2H111/EA24; 2H111/EA32;
                        2H111/EA41; 2H111/EA43; 2H111/FA01; 2H111/FA11;
                        2H111/FA12; 2H111/FA21; 2H111/FA25; 2H111/FA27;
                        2H111/FB09; 2H111/FB12; 2H111/FB25; 5D029/JA01;
                        5D029/JB35; 5D029/JB46; 5D029/JC09; 5D029/JC11;
                        5D029/JC14; 5D029/LA17; 5D029/LB07; 5D029/LB11;
                        5D029/MA02; 5D029/MA03; 5D029/MA04
AB   An optical recording disk capable of recording/reproducing data
     constituted of a recording mark array including recording marks and blank
     areas even when the length of the recording marks or the length of the
     blank area between adjacent recording marks is shorter than a resoln.
     limit, capable of increasing the recording capacity greatly, and capable
     of enhancing C/N ratio of a reprodn. signal.  The optical recording disk
     comprises a substrate, a third dielec. layer, a light absorption layer, a
     second dielec. layer, a decompn. reactive layer principally contg. a
     platinum oxide, a first dielec. layer, and a light transmitting layer,
     characterized in that the second dielec. layer has a thickness of 20-100
     nm, the platinum oxide in the decompn. reactive layer is decompd. into
     platinum and oxygen when the decompn. reactive layer is irradiated with a
     laser beam through the light transmitting layer, cavities are formed by
     oxygen gas thus produced, and a recording mark is formed on the decompn.
     reactive layer by fine platinum particles deposited in the cavities.
ST   rewritable optical recording disk platinum oxide oxygen
IT   Erasable optical disks
        (optical recording disk showing enhanced C/N ratio and increased
        recording capacity)
IT   1314-98-3, Zinc sulfide, uses   7631-86-9, Silica, uses   11129-89-8,
     Platinum oxide   ***821794-57-4***
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RL: DEV (Device component use); USES (Uses)
(optical recording disk showing enhanced C/N ratio and increased recording capacity)
IT 7440-06-4, Platinum, uses 7782-44-7, Oxygen, uses
RL: DEV (Device component use); FMU (Formation, unclassified); FORM (Formation, nonpreparative); USES (Uses)
(optical recording disk showing enhanced C/N ratio and increased recording capacity)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(6) Raitoku Kagi Kofun Yugen Koshi; JP 200430891 A 2004
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L10 ANSWER 6 OF 22 CAPLUS
AN 2004:523766 CAPLUS
DN 142:439644
ED Entered STN: 30 Jun 2004
TI Ferroelectric catastrophe: beyond nanometre-scale optical resolution
AU Tominaga, Junji; Shima, Takayuki; Kuwahara, Masashi; Fukaya, Toshio; Kolobov, Alexander; Nakano, Takashi
CS Centre for Applied Near-Field Optics, National Institute of Advanced Industrial Science and Technology, Tsukuba, 305-8562, Japan
SO Nanotechnology (2004), 15(5), 411-415
CODEN: NNOTER; ISSN: 0957-4484
PB Institute of Physics Publishing
DT Journal
LA English
CC 76-8 (Electric Phenomena)
AB The optical diffraction limit is rigidly detd. as a simple equation of wavelength .lambda. and lens numerical aperture NA (.ltoreq.1): .lambda./2/NA. In this paper, we report that Ag5.8In4.4Sb61.0Te28.8 and Ge2Sb2Te5 chalcogenide thin films, which are typical of optical recording materials used in digital versatile disks (DVDs), enable a resoln. of under .lambda./10 due to their ferroelec. properties. In the Ag5.8In4.4Sb61.0Te28.8 film this optical super-resoln. can be obsd. between 350 and 400.degree., resulting in a second phase transition from a hexagonal (A7 belonging to R-3m) to a rhombohedral structure of R32 or R3m. In Ge2Sb2Te5, the temp. range is much wider, between 250 and 450.degree., which is also due to a second phase transition from a NaCl-type fcc to a hexagonal structure.
ST ferroelec catastrophe nanometer scale optical resoln chalcogenide thin film
IT Films
(elec. conductive; second phase transition of chalcogenides and dynamic anal. on rotating optical disk inducing super-resoln. effect nanometer-scale optical resoln.)
IT Electric conductors
(films; second phase transition of chalcogenides and dynamic anal. on rotating optical disk inducing super-resoln. effect nanometer-scale optical resoln.)
IT Magnetic disks
(hard; second phase transition of chalcogenides and dynamic anal. on rotating optical disk inducing super-resoln. effect nanometer-scale optical resoln.)
IT Ferroelectric materials
Ferroelectricity
Optical diffraction
Optical recording materials
(second phase transition of chalcogenides and dynamic anal. on rotating optical disk inducing super-resoln. effect nanometer-scale optical resoln.)
IT Chalcogenides
RL: DEV (Device component use); PRP (Properties); TEM (Technical or

engineered material use); USES (Uses)
(thin film; second phase transition of chalcogenides and dynamic anal. on rotating optical disk inducing super-resoln. effect nanometer-scale optical resoln.)

IT 16150-49-5, Antimony germanium telluride (Sb2Ge2Te5) ***850907-91-4***
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(second phase transition of chalcogenides and dynamic anal. on rotating optical disk inducing super-resoln. effect nanometer-scale optical resoln.)

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(23) Tominaga, J; Appl Phys Lett 1998, V73, P2078 CAPLUS
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L10 ANSWER 7 OF 22 CAPLUS

AN 2004:297269 CAPLUS

DN 142:307187

ED Entered STN: 13 Apr 2004

TI Bubble's function in the process of readout for PdOx- and PtOx-type super-RENS disk

AU Liu, Qian; Tominaga, Junji; Fukaya, Toshio

CS Center for Applied Near-Field Optics Research (CAN-FOR), National Institute of Advanced Industrial Science and Technology, Ibaraki, 305-8562, Japan

SO Proceedings of SPIE-The International Society for Optical Engineering (2004), 5275(BioMEMS and Nanotechnology), 85-90
CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal

LA English

CC 76-3 (Electric Phenomena)

AB The bubble's functions in readout process for PdOx and PtOx superresoln. near-field structure (super-RENS) disk are studied with the PdOx and PtOx mask sample and with a repetitive Z-scan method. The results indicate that the optical responses on transmittance and reflectance are related to shape and size of the bubble. The deformation of bubbles before and after repetitive scan is obsd. by an optical microscope, and the sizes of the bubbles corresponding to different repetitive Z-scan order of times are analyzed by an at. force microscope.

ST palladium platinum oxide super RENS disk readout bubble function

IT Bubbles
(bubble's function in readout process of palladium oxide and platinum oxide superresoln. near-field structure disk with repetitive Z-scan method)

IT Disks
(super RENS; bubble's function in readout process of palladium oxide and platinum oxide superresoln. near-field structure disk with repetitive Z-scan method)

IT 1314-08-5, Palladium oxide 11129-89-8, Platinum oxide
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(bubble's function in readout process of palladium oxide and platinum oxide superresoln. near-field structure disk with repetitive Z-scan method)
IT 1314-98-3, Zinc sulfide (ZnS), uses 7631-86-9, Silica, uses ***502762-05-2***
RL: TEM (Technical or engineered material use); USES (Uses)
(deformation, bubble's function in readout process of palladium oxide and platinum oxide superresoln. near-field structure disk with repetitive Z-scan method)
RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L10 ANSWER 8 OF 22 CAPLUS
AN 2004:259948 CAPLUS
DN 140:414855
ED Entered STN: 30 Mar 2004
TI Super-resolutional readout disk with metal-free phthalocyanine recording layer
AU Shima, Takayuki; Kuwahara, Masashi; Fukaya, Toshio; Nakano, Takashi; Tominaga, Junji
CS Center for Applied Near-Field Optics Research (CAN-FOR), National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, 305-8562, Japan
SO Japanese Journal of Applied Physics, Part 2: Letters & Express Letters (2004), 43(1A/B), L88-L90
CODEN: JAPLD8
PB Japan Society of Applied Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB An optical disk with metal-free phthalocyanine (C32H18N8, H2PC) and Ag6.0In4.4Sb61.0Te28.6 layers were prepd. It was possible to readout 200-nm mark with carrier-to-noise ratio of 41 dB that is beyond the resoln. limit size. The cross-sectional image confirmed that H2PC is a recording layer forming deformation. Metal particles were found not to be necessary for the super-resolutional readout, and the results should be helpful for understanding the readout mechanism of the super-resoln. near-field structure (super-RENS) disk. An advantage of using H2PC recording layer was that it is resistant to temp. increase (.apprx.400.degree.C) induced by the laser irradn. for the super-resolutional readout.
ST phthalocyanine recording layer optical disk superresoln readout
IT Optical disks
Optical recording materials
(super-resolutional readout disk with metal-free phthalocyanine recording layer)
IT 574-93-6, Phthalocyanine ***689256-53-9***
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(super-resolutional readout disk with metal-free phthalocyanine recording layer)
IT 157392-07-9, Silicon sulfur zinc oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(super-resolutional readout disk with metal-free phthalocyanine recording layer)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L10 ANSWER 9 OF 22 CAPLUS
AN 2003:689199 CAPLUS
DN 139:355982
ED Entered STN: 04 Sep 2003
TI Super-resolution by elliptical bubble formation with PtOx and AgInSbTe layers

AU Kim, Jooho; Hwang, Inoh; Yoon, Duseop; Park, Insik; Shin, Dongho; Kikukawa, Takashi; Shima, Takayuki; Tominaga, Junji
CS Digital Media R&D Center, Samsung Electronics Co., Ltd., Suwon, 442-742, S. Korea

SO Applied Physics Letters (2003), 83(9), 1701-1703
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics

DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB The recording and retrieval of signals below 100 nm mark length were attempted using elliptical bubble-type super-resoln. technol. with platinum oxide (PtOx) and ductile AgInSbTe layers, using the same optical system as that of a digital versatile disk (635 nm wavelength red laser system). The carrier-to-noise ratio (CNR) of over 47 dB for 100 nm mark length signals (over 43 dB for 80 nm mark length signals) was obtained, which can be considered as a com. acceptable level of CNR. The recording mechanism of the sample disk was shown through the transmission electron microscopy cross-section image observation to be by rigid elliptical bubble formation at the PtOx layer located between the AgInSbTe layers. The results of this report represent the potential for a much higher-d. storage using the red laser system and a sub-terabyte optical storage using the blue laser system.

ST super resoln near field optical disk elliptical bubble formation; optical recording reading mechanism super RENS disk
IT Optical recording
(optical recording and data retrieval based on super-resoln. by elliptical bubble formation at PtOx layer between AgInSbTe layers)
IT Bubbles
(optical recording and data retrieval based on super-resoln. by elliptical bubble formation by decompn. in PtOx layer between AgInSbTe layers)
IT Thermal decomposition
(photo-; optical recording and data retrieval based on super-resoln. by elliptical bubble formation by decompn. in PtOx layer between AgInSbTe layers)
IT Optical disks
(super-RENS; optical recording and data retrieval based on super-resoln. by elliptical bubble formation at PtOx layer between AgInSbTe layers)
IT 1314-98-3, Zinc sulfide, uses 7631-86-9, Silica, uses
502762-05-2
RL: DEV (Device component use); USES (Uses)
(disk structure; optical recording and data retrieval based on super-resoln. by elliptical bubble formation at PtOx layer between AgInSbTe layers)
IT 11129-89-8, Platinum oxide
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process);

USES (Uses)
(mask layer; optical recording and data retrieval based on super-resoln. by elliptical bubble formation at PtOx layer between AgInSbTe layers)

IT 7440-06-4, Platinum, properties 7782-44-7, Oxygen, properties
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); FORM (Formation, nonpreparative); PROC (Process)
(optical recording and data retrieval based on super-resoln. by elliptical bubble formation by decompn. in PtOx layer between AgInSbTe layers)

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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L10 ANSWER 10 OF 22 CAPLUS

AN 2003:420802 CAPLUS
DN 139:171209
ED Entered STN: 02 Jun 2003

TI Effects of Ag and In addition on the optical properties and crystallization kinetics of eutectic Sb70Te30 phase-change recording film

AU Her, Yung-Chiun; Chen, Hung; Hsu, Yung-Sung
CS Department of Materials Engineering, National Chung Hsing University, Taichung, Taiwan

SO Journal of Applied Physics (2003), 93(12), 10097-10103
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB Adding specific foreign elements into the eutectic Sb70Te30 fast-growth material is expected to be an effective way to increase its thermal stability for blue laser recording. The authors studied the effects of Ag and In addn. on the optical properties and crystn. kinetics of the eutectic Sb70Te30 recording film. The results showed that the addn. of Ag and In increased the refractive index and decreased the extinction coeff. of amorphous Sb70Te30 film and decreased both the refractive index and extinction coeff. of cryst. Sb70Te30 film. The archival stability of the eutectic SbTe alloy could be effectively improved by adding Ag and In elements, however, the addn. of Ag and In also made the initialization of the as-deposited eutectic SbTe film more difficult. During the isothermal crystn. process, the incubation time was extended, crystn. speed was reduced, and the crystn. process became more grain-growth dominated as Ag and In were added. All these effects were further enhanced by increasing the concn. of In element.

ST optical property crystn kinetics antimony tellurium phase change recording; indium silver additive effect antimony tellurium phase change recording

IT Absorptivity
Optical constants
Optical reflection
Thermal stability
(effects of Ag and In addn. on optical properties and crystn. kinetics of eutectic Sb70Te30 phase-change optical recording film)

IT Crystallization
(kinetics; effects of Ag and In addn. on optical properties and crystn.

kinetics of eutectic Sb70Te30 phase-change optical recording film)
IT Optical recording materials
(phase-change; effects of Ag and In addn. on optical properties and crystn. kinetics of eutectic Sb70Te30 phase-change optical recording film)
IT Erasable optical disks
(phase-change; effects of Ag and In addn. on optical properties and crystn. kinetics of eutectic Sb70Te30 phase-change recording film)
IT Aluminum alloy, base
RL: TEM (Technical or engineered material use); USES (Uses)
(reflective layer; effects of Ag and In addn. on optical properties and crystn. kinetics of eutectic Sb70Te30 phase-change recording film)
IT 1314-98-3, Zinc sulfide, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(dielec. layer; effects of Ag and In addn. on optical properties and crystn. kinetics of eutectic Sb70Te30 phase-change optical recording film)
IT 12623-70-0, Antimony 70, tellurium 30 (atomic) 149663-33-2 573991-44-3
573991-46-5
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(effects of Ag and In addn. on optical properties and crystn. kinetics of eutectic Sb70Te30 phase-change optical recording film)
RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L10 ANSWER 11 OF 22 CAPLUS
AN 2003:221203 CAPLUS
DN 138:409267
ED Entered STN: 21 Mar 2003
TI Recording and readout mechanisms of super-resolution near-field structure disc with silver-oxide layer
AU Kikukawa, Takashi; Tachibana, Akihiro; Fuji, Hiroshi; Tominaga, Junji
CS Information Technology Research Center, TDK Corporation, Nagano, 385-0009, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (2003), 42(2B), 1038-1039
CODEN: JAPNDE
PB Japan Society of Applied Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The authors obsd. recorded and readout states of a super-resoln. near-field structure disk with a AgO layer by the use of a transmission electron microscope. It was confirmed that recording is caused by the explosion of AgO and that the deformation of the layers due to the explosion becomes a recorded mark. The Ag particles which irreversibly

ppt. after a high' readout power irradn. are considered to be the origin
of the super-resoln. readout.
ST   recording readout super resoln near field disk silver oxide; optical disk
super RENS silver oxide layer
IT   Optical recording
(recording and readout mechanisms of super-resoln. near-field structure
disk with silver-oxide layer)
IT   Optical disks
(super-RENS; recording and readout mechanisms of super-resoln.
near-field structure disk with silver-oxide layer)
IT   1314-98-3, Zinc sulfide, processes   7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(dielec. layer; recording and readout mechanisms of super-resoln.
near-field structure disk with silver-oxide layer)
IT   7440-22-4, Silver, processes
RL: DEV (Device component use); FMU (Formation, unclassified); PEP
(Physical, engineering or chemical process); PYP (Physical process); FORM
(Formation, nonpreparative); PROC (Process); USES (Uses)
(recording and readout mechanisms of super-resoln. near-field structure
disk with silver-oxide layer)
IT   1301-96-8, Silver oxide(AgO)   ***502762-05-2***   , Antimony 60.8, indium
4.5, silver 6, tellurium 28.7 (atomic)
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(recording layer; recording and readout mechanisms of super-resoln.
near-field structure disk with silver-oxide layer)
RE.CNT 3   THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Tominaga, J; Appl Phys Lett 1998, V73, P2078 CAPLUS
(3) Tominaga, J; Jpn J Appl Phys 2001, V40, P1831 CAPLUS

L10 ANSWER 12 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
AN   2002:954160 CAPLUS
DN   138:262594
ED   Entered STN: 17 Dec 2002
TI   Rigid bubble pit formation and huge signal enhancement in super-resolution
near-field structure disk with platinum oxide layer
AU   Kikukawa, T.; Nakano, T.; Shima, T.; Tominaga, J.
CS   TDK Corporation, Information Technology Research Center, Saku, Nagano,
385-0009, Japan
SO   Applied Physics Letters (2002), 81(25), 4697-4699
CODEN: APPLAB; ISSN: 0003-6951
PB   American Institute of Physics
DT   Journal
LA   English
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
AB   Huge signal enhancement was obsd. by a super-resoln. near-field structure
disk with a platinum-oxide layer. The carrier-to-noise ratio of
200-nm-mark trains reached 46.1 dB, and 42.3 dB was obtained even at
150-nm-mark trains. The sizes of the marks were one-fifth to one-seventh
of the laser spot diam. of the readout system. The cross section of the
mark trains was also obsd. by transmission electron microscopy. It was
confirmed that 200-nm-size bubble pits were rigidly formed in good sepn.
and .apprx.20-nm-platinum particles pptd. inside the bubble. The
computer-simulation based on the model supported the huge signal
enhancement.
ST   bubble pit formation super resoln near field structure disk; platinum
oxide super REN optical disk bubble pit formation
IT   Metallic glasses
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PYP (Physical process); PROC (Process); USES (Uses)
(antimony indium silver telluride; rigid bubble pit formation and huge
signal enhancement in super-resoln. near-field structure disk with
platinum oxide layer)
IT   Optical recording
(rigid bubble pit formation and huge signal enhancement in
super-resoln. near-field structure disk with platinum oxide layer)
IT   Optical disks
(super-resoln. near-field; rigid bubble pit formation and huge signal

enhancement in super-resoln. near-field structure disk with
platinum-oxide layer)
IT 7440-22-4, Silver, processes 7440-36-0, Antimony, processes 7440-74-6, Indium, processes 13494-80-9, Tellurium, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(antimony indium silver telluride; rigid bubble pit formation and huge signal enhancement in super-resoln. near-field structure disk with platinum oxide layer)
IT 7440-06-4, Platinum, processes
RL: DEV (Device component use); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); FORM (Formation, nonpreparative); PROC (Process); USES (Uses)
(rigid bubble pit formation and huge signal enhancement in super-resoln. near-field structure disk with platinum oxide layer)
IT 1314-98-3, Zinc sulfide, processes 7631-86-9, Silica, processes
502762-05-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(rigid bubble pit formation and huge signal enhancement in super-resoln. near-field structure disk with platinum oxide layer)
IT 1314-15-4, Platinum dioxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(rigid bubble pit formation and huge signal enhancement in super-resoln. near-field structure disk with platinum-oxide layer)
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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(17) Yoshikawa, H; Appl Opt 1999, V38, P863

L10 ANSWER 13 OF 22 CAPLUS
AN 2002:710968 CAPLUS
DN 137:239816
ED Entered STN: 19 Sep 2002
TI Phase-change optical recording medium
IN Hanaoka, Katsushige; Miura, Hiroshi; Onagi, Nobuaki
PA Ricoh Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM B41M005-26
ICS G11B007-24
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 56
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002264513	A2	20020918	JP 2001-67843	20010309
PRAI	JP 2001-67843		20010309		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2002264513	ICM	B41M005-26
	ICS	G11B007-24

IPCI B41M0005-26 [ICM,7]; G11B0007-24 [ICS,7]

AB The optical recording medium comprises, successively from the bottom, a substrate, 1st dielec. layer, a recording layer, 2nd dielec. layer, and a reflecting heat-release layer; wherein a crystn.-accelerating layer is formed next to the recording layer and they mix to each other during the writing process, and the recording layer has a compn. expressed by Ag.alpha.In.beta.Sb.gamma.Te.delta. (.alpha. = 0.1-10, 1 < .beta. .ltoreq.20, .gamma. = 35-80, .delta. = 20-35, .alpha. + .beta. + .gamma. + .delta. = 100). Preferably, the crystn.-accelerating layer contains Group VA and VIA elements. The recording medium does not need any prior initialization.

ST phase change optical disk antimony tellurium alloy; erasable optical disk antimony tellurium silver indium alloy

IT Erasable optical disks
(phase-change; phase-change optical recording medium having crystn.-accelerating layer next to recording layer)

IT 87715-54-6, Antimony 25, silver 25, tellurium 50 (atomic) 122561-66-4, Antimony 40, tellurium 60 (atomic) 296241-58-2
RL: DEV (Device component use); USES (Uses)
(recording layer; phase-change optical recording medium having crystn.-accelerating layer next to recording layer)

IT ***459830-89-8***
RL: TEM (Technical or engineered material use); USES (Uses)
(recording layer; phase-change optical recording medium having crystn.-accelerating layer next to recording layer)

L10 ANSWER 14 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2001:534385 CAPLUS

DN 135:129627

ED Entered STN: 25 Jul 2001

TI Phase change type optical recording medium showing excellent overwrite performance in extended period of time

IN Kikukawa, Takashi; Utsunomiya, Hajime

PA TDK Corporation, Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM B41M005-26
ICS G11B007-24

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001199166	A2	20010724	JP 2000-9461	20000118
	US 2001009708	A1	20010726	US 2001-760847	20010117
PRAI	JP 2000-9461	A	20000118		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2001199166	ICM	B41M005-26
	ICS	G11B007-24
	IPCI	B41M0005-26 [ICM,7]; G11B0007-24 [ICS,7]
US 2001009708	IPCI	B32B0003-02 [ICM,7]
	IPCR	G11B0007-24 [I,C]; G11B0007-243 [I,A]
	NCL	428/064.100
	ECLA	G11B007/243

AB The recording layer of the title optical recording medium comprises Ag, In, Sb and Te as main components and Ge as a sub component, wherein the mole ratio of the above components satisfies (AgaInbSbcTed)(1-e/100)Gee [a = 2-20; b = 2-20; c = 35-80, d = 8-40; a+b+c+d = 100; e = 1-15]. The mole ratio is preferably e .gtoreq.1.8, e.ltoreq.8, or c = 58-80.

ST phase change optical recording material erasable optical disk; silver indium antimony tellurium germanium optical recording material

IT Group VA element compounds
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(antimony chalcogenides, antimony germanium indium silver telluride; in recording layer of phase change type optical disk showing excellent overwrite performance in extended period of time)

IT Telluride glasses

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(antimony germanium indium silver telluride; in recording layer of phase change type optical disk showing excellent overwrite performance in extended period of time)

IT Erasable optical disks
(phase change type optical recording medium showing excellent overwrite performance in extended period of time)

IT 7440-22-4, Silver, processes 7440-36-0, Antimony, processes 7440-56-4, Germanium, processes 7440-74-6, Indium, processes 13494-80-9, Tellurium, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(antimony germanium indium silver telluride glass; in recording layer of phase change type optical disk showing excellent overwrite performance in extended period of time)

IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(antimony indium silver silicon telluride glass; in recording layer of phase change type optical disk showing excellent overwrite performance in extended period of time)

IT 7440-31-5, Tin, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(antimony indium silver tin telluride glass; in recording layer of phase change type optical disk showing excellent overwrite performance in extended period of time)

IT 350819-61-3 ***350819-62-4*** 350819-63-5 350819-64-6 350819-65-7 350819-66-8 350819-67-9 350819-69-1 350819-70-4 350819-71-5 350819-72-6 350819-73-7
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in recording layer of phase change type optical disk showing excellent overwrite performance in extended period of time)

L10 ANSWER 15 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:854360 CAPLUS

DN 134:31881

ED Entered STN: 06 Dec 2000

TI Target for optical recording film and the film obtained

IN Mashima, Munetaka; Chiang, Jen Hao

PA Mitsubishi Materials Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C22C012-00
ICS B41M005-26; G11B007-24; G11B007-26

CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 74

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000336443	A2	20001205	JP 1999-146039	19990526
PRAI	JP 1999-146039		19990526		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000336443	ICM	C22C012-00
	ICS	B41M005-26; G11B007-24; G11B007-26
	IPCI	C22C0012-00 [ICM,7]; B41M0005-26 [ICS,7]; G11B0007-24 [ICS,7]; G11B0007-26 [ICS,7]

AB A target for an optical recording film is from a Sb alloy contg. In 0.1-30, Ag 0.1-30, Te 10-60, a Pt-group metal 0.1-30, and Fe 1-1000 ppm. The target is sputtered to obtain an optical recording film.

ST target optical recording film antimony indium silver platinum alloy

IT Optical recording materials
Sputtering targets
(target for optical recording film and the film obtained)

IT 312307-02-1P 312307-03-2P 312307-04-3P 312307-05-4P 312307-06-5P 312307-07-6P 312307-08-7P 312307-09-8P 312307-10-1P 312307-11-2P

312307-12-3P   312307-13-4P
RL: PNU (Preparation, unclassified); PREP (Preparation)
(film; target for optical recording film and the film obtained)
IT   7439-89-6, Iron, uses
RL: MOA (Modifier or additive use); USES (Uses)
(target for optical recording film and the film obtained)
IT   ***312306-90-4***   312306-91-5   312306-92-6   312306-93-7
312306-94-8   312306-95-9   312306-96-0   312306-97-1   312306-98-2
312306-99-3   312307-00-9   312307-01-0
RL: NUU (Other use, unclassified); USES (Uses)
(target; target for optical recording film and the film obtained)

L10 ANSWER 16 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
AN   2000:233920 CAPLUS
DN   132:271729
ED   Entered STN: 12 Apr 2000
TI   Optical recording/readout material with improved high sensitivity and durability
IN   Harigaya, Masato; Kinoshita, Mikio; Deguchi, Hiroshi
PA   Ricoh Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM B41M005-26
ICS G11B007-24
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000103168	A2	20000411	JP 1998-278337	19980930
PRAI	JP 1998-278337		19980930		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000103168	ICM	B41M005-26
	ICS	G11B007-24
	IPCI	B41M0005-26 [ICM,7]; G11B0007-24 [ICS,7]

AB   The optical recording/readout material comprises Ag, In, Sb and Te, and has a structure of (AgSbTe2)a(InxSbyTez)1-a [a = 0.12-0.25; x = 0.02-0.3; y = 0.45-0.75; z = 0.2-0.4; x+y+z = 1]. The optical recording/readout material may be doped with AuCl, Na3N, Cu3N, and/or Ge3N2.
ST   optical information recording material silver indium antimony tellurium
IT   Optical memory devices
Optical recording materials
(optical recording/readout material with improved high sensitivity and durability)
IT   1308-80-1, Copper nitride (Cu3N)   10294-29-8, Gold chloride (AuCl)
12136-83-3, Sodium nitride   56089-33-9, Germanium nitride (Ge3N2)
RL: MOA (Modifier or additive use); USES (Uses)
(dopant to optical recording/readout material with improved high sensitivity and durability)
IT   263356-88-3   263356-89-4   ***263356-90-7***   263356-91-8
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in optical recording/readout material with improved high sensitivity and durability)

L10 ANSWER 17 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
AN   2000:166212 CAPLUS
DN   132:214807
ED   Entered STN: 14 Mar 2000
TI   Rewritable phase-transition optical recording medium
IN   Yuzuhara, Hajime; Shinozuka, Michiaki; Shibaguchi, Takashi
PA   Ricoh Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM G11B007-24
ICS G11B007-24; B41M005-26

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000076702	A2	20000314	JP 1998-243865	19980828
PRAI	JP 1998-243865		19980828		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000076702	ICM	G11B007-24
	ICS	G11B007-24; B41M005-26
	IPCI	G11B0007-24 [ICM,7]; G11B0007-24 [ICS,7]; B41M0005-26 [ICS,7]

AB In the recording medium comprising a transparent substrate, a lower protective layer, a recording layer, an upper recording layer, and a reflective heat-releasing layer, optical phase difference between the amorphous phase and the cryst. phase is 0.03-0.5 .pi. at a ratio of reflectance of the amorphous phase to that of the cryst. phase 35-50%. Refractive index and absorption coeff. of the amorphous and cryst. phases, thickness of each layer, and groove depth of the transparent substrate are also specified. The recording layer may comprise Ag.alpha.In.beta.Sb.gamma.Te.delta., where 1 .ltoreq. .alpha. < 10, 1 < .beta. .ltoreq., 20, 35 .ltoreq. .gamma. .ltoreq. 70, 20 .ltoreq. .delta. .ltoreq. 35, and .alpha. + .beta. + .gamma. + .delta. = 100. In the optical recording medium, the recorded data can be reproduced by a DPD (differential phase detection) method with a ROM device.

ST rewritable phase transition optical recording medium; differential phase detection tracking optical recording medium

IT Optical recording materials
(erasable; rewritable phase-transition optical recording medium in which data is reproduced using ROM device)

IT Optical disks
(rewritable phase-transition optical recording medium in which data is reproduced using ROM device)

IT Polycarbonates, uses
RL: DEV (Device component use); USES (Uses)
(substrate; rewritable phase-transition optical recording medium in which data is reproduced using ROM device)

IT 1314-98-3, Zinc sulfide, uses
RL: DEV (Device component use); USES (Uses)
(lower protective layer contg. silica and; rewritable phase-transition optical recording medium in which data is reproduced using ROM device)

IT 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(lower protective layer contg. zinc sulfide and; rewritable phase-transition optical recording medium in which data is reproduced using ROM device)

IT ***260368-67-0***
RL: DEV (Device component use); USES (Uses)
(rewritable phase-transition optical recording medium in which data is reproduced using ROM device)

L10 ANSWER 18 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:648997 CAPLUS
DN 131:279349
ED Entered STN: 12 Oct 1999
TI Manufacture of sputtering target for phase change-type optical recording disk
IN Kishi, Toshihito; Ito, Hiroyuki
PA Sumitomo Metal Mining Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C23C014-34
ICS B22F003-105; B22F005-00; C22C028-00; G11B007-26
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 56
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

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PI   JP 11279752          A2    19991012    JP 1998-80044          19980327
PRAI JP 1998-80044              19980327
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
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 JP 11279752     ICM    C23C014-34
                 ICS    B22F003-105; B22F005-00; C22C028-00; G11B007-26
                 IPCI   C23C0014-34 [ICM,6]; B22F0003-105 [ICS,6]; B22F0005-00
                        [ICS,6]; C22C0028-00 [ICS,6]; G11B0007-26 [ICS,6]
AB   In manuf. of the sputtering targets composed of 3-50 at.% of Ge, Ag,
     and/or In, 10-50 at.% of Sb, .ltoreq.5 at.% of additives if necessary, and
     balance Te; the alloy powder is discharge plasma sintered by heating to a
     prescribed temp. within 30 min and by retaining at a prescribed temp.
     within 30 min.  Preferably, the alloy powder is formed by atomizing and
     quenching of alloy melt.  The time required for elevation of the temp. for
     the sintering can be shortened by carrying the discharge plasma sintering.
ST   optical recording disk sputtering target alloy; antimony alloy sputtering
     target optical disk; plasma sintering sputtering target optical disk;
     phase change optical disk sputtering target; germanium alloy sputtering
     target optical disk; silver alloy sputtering target optical disk; indium
     alloy sputtering target optical disk; tellurium alloy sputtering target
     optical disk
IT   Optical disks
     Sputtering targets
        (manuf. of Sb-Te alloy sputtering target for phase change optical
        recording disk by discharge plasma sintering)
IT   Sintering
        (plasma, alloy; manuf. of Sb-Te alloy sputtering target for phase
        change optical recording disk by discharge plasma sintering)
IT   130119-28-7, Antimony 22, germanium 22, tellurium 56 (atomic)
       ***245671-98-1***  , Antimony 10-50, germanium 0-50, indium 0-50, silver
     0-50, tellurium 0-87 (atomic)
     RL: PEP (Physical, engineering or chemical process); TEM (Technical or
     engineered material use); PROC (Process); USES (Uses)
        (sputtering target; manuf. of Sb-Te alloy sputtering target for phase
        change optical recording disk by discharge plasma sintering)

L10  ANSWER 19 OF 22  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   1999:603388  CAPLUS
DN   131:235821
ED   Entered STN:  23 Sep 1999
TI   Optical recording material
IN   Yuzuhara, Hajime; Tashiro, Hiroko; Deguchi, Hiroshi
PA   Ricoh Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 6 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM  B41M005-26
     ICS  C22C012-00; G11B007-24
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   JP 11254833          A2    19990921    JP 1998-356976         19981201
PRAI JP 1997-347175       A     19971202
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  -------------------------------------------------
 JP 11254833     ICM    B41M005-26
                 ICS    C22C012-00; G11B007-24
                 IPCI   B41M0005-26 [ICM,6]; C22C0012-00 [ICS,6]; G11B0007-24
                        [ICS,6]
AB   The optical recording material comprises a stack of a 1st dielec.
     protective layer, a recording layer, a 2nd dielec. protective layer, and a
     reflective heat-releasing layer on a substrate, wherein the recording
     layer is made from a substance represented by
     Ag.alpha.In.beta.Sb.gamma.Te.delta. (.alpha., .beta., .gamma., and .delta.
     in at. % satisfy the following relations: 1.ltoreq..alpha.<10,
     1<.beta..ltoreq.20, 35.ltoreq..gamma..ltoreq.70,
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20.ltoreq..delta..ltoreq.35, .alpha. + .beta. + .gamma. + .delta. = 100, 4.beta. - .delta..ltoreq.0, .gamma. - 2.delta..gtoreq.0, and .gamma. - 8.alpha..gtoreq.0). The optical recording material showed a high no. of overwriting capability.
ST optical recording material; silver indium antimony tellurium recording layer
IT Optical recording materials
(optical recording material contg. AgInSbTe amorphous recording layer)
IT 221383-96-6 221384-04-9 221386-30-7 221386-34-1 244023-70-9 244023-71-0 244023-72-1 244023-73-2 ***244023-74-3***
RL: DEV (Device component use); USES (Uses)
(optical recording material contg. AgInSbTe amorphous recording layer)

L10 ANSWER 20 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:188903 CAPLUS
DN 130:202855
ED Entered STN: 23 Mar 1999
TI Heat treated and sintered sputtering target for deposition of optical recording layers
IN Iwasaki, Hiroko; Kageyama, Yoshiyuki; Harigaya, Makoto; Takahashi, Masaetsu; Deguchi, Hiroshi; Yamada, Katsuyuki; Hayashi, Yoshitaka; Ide, Yukio
PA Ricoh Company, Ltd., Japan
SO U.S., 12 pp., Cont.-in-part of U.S. Ser. No. 354,227, abandoned.
CODEN: USXXAM
DT Patent
LA English
IC ICM C23C014-14
ICS B41M005-26
INCL 204298130
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5882493	A	19990316	US 1997-946880	19971008
	JP 2003003222	A2	20030108	JP 2002-66193	19941213
PRAI	JP 1993-341906	A	19931213		
	JP 1994-116013	A	19940502		
	US 1994-354227	B1	19941212		
	JP 1994-332532	A3	19941213		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 5882493	ICM	C23C014-14
	ICS	B41M005-26
	INCL	204298130
	IPCI	C23C0014-14 [ICM,6]; B41M0005-26 [ICS,6]
	NCL	204/298.130; 075/228.000; 075/247.000; 148/430.000; 148/513.000; 148/514.000; 419/033.000
	ECLA	C23C014/34B2; G11B007/243
JP 2003003222	IPCI	C22C0012-00 [ICM,7]; B41M0005-26 [ICS,7]; C22F0001-16 [ICS,7]; C23C0014-34 [ICS,7]; G11B0007-24 [ICS,7]; G11B0007-26 [ICS,7]; C22F0001-00 [ICS,7]

AB A sputtering target, for forming a recording layer of an optical recording medium in which information is written and erased through a transition between two phases by using electromagnetic wave energy, consists of a heat-treated and sintered compn. represented by the formula.
ST sputtering antimony indium silver tellurium optical recording
IT Heat treatment
Optical disks
Optical recording materials
Sintering
Sputtering
Sputtering targets
(heat treated and sintered sputtering target for deposition of optical recording layers)
IT 1314-98-3, Zinc sulfide, processes 7631-86-9, Silica, processes ***220712-89-0*** , Antimony 15-83, indium 3-30, silver 2-30, tellurium 10-50 (atomic)
RL: PEP (Physical, engineering or chemical process); TEM (Technical or

engineered material use); PROC (Process); USES (Uses)
(heat treated and sintered sputtering target for deposition of optical recording layers)

IT 7440-22-4, Silver, uses 7440-36-0, Antimony, uses 7440-74-6, Indium, uses 13494-80-9, Tellurium, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(heat treated and sintered sputtering target for deposition of optical recording layers)

IT 179867-27-7, Antimony 80, indium 5, silver 4, tellurium 11 (atomic)
179867-28-8, Antimony 64.5, indium 9, silver 5.5, tellurium 21 (atomic)
179867-29-9, Antimony 50, indium 29, silver 5, tellurium 16 (atomic)
179867-30-2, Antimony 54, indium 13, silver 7, tellurium 26 (atomic)
179867-31-3, Antimony 62, indium 9, silver 8, tellurium 21 (atomic)
179867-32-4, Antimony 32, indium 13, silver 9, tellurium 46 (atomic)
179867-33-5, Antimony 57, indium 10, silver 9, tellurium 24 (atomic)
179867-34-6, Antimony 53, indium 13, silver 9, tellurium 25 (atomic)
179867-35-7, Antimony 41, indium 13, silver 9, tellurium 37 (atomic)
179867-36-8, Antimony 45, indium 13, silver 10, tellurium 32 (atomic)
179867-37-9, Antimony 47, indium 13, silver 12, tellurium 28 (atomic)
179867-38-0, Antimony 20, indium 25, silver 13, tellurium 42 (atomic)
179867-39-1, Antimony 57, indium 2, silver 20, tellurium 21 (atomic)
179867-40-4, Antimony 41, indium 19, silver 25, tellurium 15 (atomic)
179867-41-5, Antimony 12, indium 26, silver 28, tellurium 34 (atomic)
179867-42-6, Antimony 63.3, indium 8.8, nitrogen 2, silver 5.4, tellurium 20.6 (atomic) 179867-44-8, Antimony 60, indium 8.4, nitrogen 7, silver 5.1, tellurium 19.5 (atomic) 179867-46-0, Antimony 61, indium 13, silver 2, tellurium 24 (atomic) 220713-17-7, Antimony 87.9, indium 4, silver 0.1, tellurium 8 (atomic) 220713-18-8, Antimony 9, indium 17, silver 11, tellurium 63 (atomic) 220713-19-9, Antimony 55.9, indium 0.1, silver 7, tellurium 37 (atomic) 220713-20-2, Antimony 25, indium 43, silver 6, tellurium 26 (atomic) 220713-21-3, Antimony 78, indium 5, silver 13, tellurium 4 (atomic) 220713-22-4, Antimony 61.3, indium 8.6, nitrogen 5, silver 5.2, tellurium 20 (atomic)
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(recording layer; heat treated and sintered sputtering target for deposition of optical recording layers)

IT 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(sputtering gas; heat treated and sintered sputtering target for deposition of optical recording layers)

IT 151060-26-3, Antimony 40, indium 15, silver 15, tellurium 30 (atomic)
179867-13-1, Antimony 76, indium 8, silver 6, tellurium 10 (atomic)
179867-14-2, Antimony 60, indium 11, silver 7, tellurium 22 (atomic)
179867-15-3, Antimony 45, indium 27, silver 8, tellurium 20 (atomic)
179867-16-4, Antimony 47, indium 15, silver 10, tellurium 28 (atomic)
179867-17-5, Antimony 56, indium 11, silver 11, tellurium 22 (atomic)
179867-18-6, Antimony 31.5, indium 12, silver 12.5, tellurium 44 (atomic)
179867-19-7, Antimony 50, indium 12.5, silver 12.5, tellurium 25 (atomic)
179867-20-0, Antimony 35, indium 15, silver 12.5, tellurium 37.5 (atomic)
179867-21-1, Antimony 32.5, indium 15, silver 12.5, tellurium 40 (atomic)
179867-22-2, Antimony 37, indium 15, silver 13, tellurium 35 (atomic)
179867-23-3, Antimony 21, indium 22, silver 18, tellurium 39 (atomic)
179867-24-4, Antimony 52, indium 5, silver 20, tellurium 23 (atomic)
179867-25-5, Antimony 43, indium 21, silver 22, tellurium 14 (atomic)
179867-26-6, Antimony 20, indium 23, silver 27, tellurium 30 (atomic)
179867-45-9, Antimony 56, indium 15, silver 4, tellurium 25 (atomic)
220713-08-6, Antimony 74, indium 10, silver 1, tellurium 15 (atomic)
220713-09-7, Antimony 85, indium 3, silver 2, tellurium 10 (atomic)
220713-10-0, Antimony 17, indium 20, silver 8, tellurium 55 (atomic)
220713-11-1, Antimony 49, indium 1, silver 10, tellurium 40 (atomic)
220713-12-2, Antimony 18, indium 40, silver 12, tellurium 30 (atomic)
220713-13-3, Antimony 74, indium 6, silver 15, tellurium 5 (atomic)
220713-14-4, Antimony 10, indium 23, silver 27, tellurium 40 (atomic)
220713-15-5, Antimony 18, indium 8, silver 34, tellurium 40 (atomic)
220713-16-6, Antimony 82.5, indium 4, silver 0.5, tellurium 13 (atomic)
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(sputtering target; heat treated and sintered sputtering target for deposition of optical recording layers)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(2) Anon; JP 62114136 1987 CAPLUS
(3) Anon; JP 03240590 1991 CAPLUS
(4) Anon; JP 04151286 1992 CAPLUS
(5) Anon; JP 04191089 1992 CAPLUS
(6) Anon; JP 04232779 1992 CAPLUS
(7) Anon; JP 05185732 1993 CAPLUS
(8) Anon; JP 06028710 1994 CAPLUS
(9) Anon; JP 06299342 1994 CAPLUS
(10) Anon; JP 06330298 1994
(11) Ide; US 5100700 1992
(12) Ide; US 5156693 1992 CAPLUS
(13) Ovshinsky; US 3530441 1970

L10 ANSWER 21 OF 22 CAPLUS
AN 1999:182453 CAPLUS
DN 130:244521
ED Entered STN: 19 Mar 1999
TI Optical recording medium showing long storage life and excellent overwritability
IN Yuzuhara, Hajime; Deguchi, Hiroshi; Shinotsuka, Michiaki; Shibaguchi, Takashi; Harigai, Masahito; Kinoshita, Mikio; Kageyama, Yoshiyuki
PA Ricoh Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM B41M005-26
ICS C23C014-14; G11B007-24
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 56
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11070737	A2	19990316	JP 1997-247690	19970828
PRAI	JP 1997-247690		19970828		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 11070737	ICM	B41M005-26
	ICS	C23C014-14; G11B007-24
	IPCI	B41M0005-26 [ICM,6]; C23C0014-14 [ICS,6]; G11B0007-24 [ICS,6]

AB The medium, such as DVD-RAM disks, comprises successively laminated layers of, from a substrate, the 1st dielec. layer, a recording layer, the 2nd dielec. layer, and a reflection heat-radiating layer, where the recording layer comprises Ag.alpha.In.beta.Sb.gamma.Te.delta. [1 .ltoreq. .alpha. < 10; 1 < .beta. .ltoreq. 20; .gamma. = 35-70; .delta. = 20-35; 65 < 3.beta. + .gamma. < 115; 40 < .alpha. + 2.delta. < 75; .alpha. + .beta. + .gamma. + .delta. = 100 (at.%)]. The recording layer may contain nitride and/or oxide of Ag, In, Sb, and/or Te, or may contain N.
ST optical disk silver indium antimony tellurium; overwritability DVD RAM disk; storage life silver antimony optical disk
IT Memory devices
(RAM (random access), DVD; optical recording medium showing long storage life and excellent overwritability)
IT Optical disks
(optical recording medium showing long storage life and excellent overwritability)
IT Polycarbonates, uses
RL: DEV (Device component use); USES (Uses)
(substrate; optical recording medium showing long storage life and excellent overwritability)
IT 157392-07-9P, Silicon sulfur zinc oxide
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(dielec. layer; optical recording medium showing long storage life and excellent overwritability)
IT 7727-37-9, Nitrogen, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(recording layer; optical recording medium showing long storage life
and excellent overwritability)
IT ' 209071-57-8P 221383-96-6P 221383-99-9P 221384-04-9P 221386-30-7P
221386-32-9P 221386-34-1P 221386-36-3P 221386-39-6P 221386-41-0P
221386-43-2P 221386-45-4P 221386-47-6P 221386-49-8P 221386-51-2P
221386-53-4P 221386-54-5P 221386-55-6P 221386-56-7P 221386-57-8P
221386-58-9P ***221386-59-0P*** 221386-60-3P 221386-61-4P
221386-62-5P 221386-63-6P
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP
(Preparation); USES (Uses)
(recording layer; optical recording medium showing long storage life
and excellent overwritability)
IT 11106-92-6
RL: DEV (Device component use); USES (Uses)
(reflection heat-radiating layer; optical recording medium showing long
storage life and excellent overwritability)

L10 ANSWER 22 OF 22 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:402644 CAPLUS
DN 129:88072
ED Entered STN: 01 Jul 1998
TI Phase change-type optical recording material
IN Tominaga, Junji; Kikukawa, Takashi; Kuribayashi, Isamu; Takahashi, Makoto
PA TDK Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM B41M005-26
ICS C23C014-06; G11B007-24
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 56
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10166738	A2	19980623	JP 1996-346749	19961210
PRAI	JP 1996-346749		19961210		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 10166738	ICM	B41M005-26
	ICS	C23C014-06; G11B007-24
	IPCI	B41M0005-26 [ICS,6]; C23C0014-06 [ICS,6]; G11B0007-24 [ICS,6]

AB The material comprises [(InaAgbTe1-a-b)1-cSbc]1-dMd (M = H, Si, C, V, W,
Ta, Zn, Ti, Ce, Tb, Y; a = 0.1-0.3; b = 0.1-0.3; c = 0.5-0.8; d = 0-0.05
at.%). The material has scattering peaks I1 and I2 at Raman shift 113-117
and 123-127 cm-1 resp. in Raman spectrum and half-value width of I2 is
larger than that of I1. The material may have scattering peaks II1 and
II2 at Raman shift 105-125 and 140-160 cm-1 resp. in Raman spectrum and
the intensity of II1 is stronger than that of II2. The material shows
high sensitivity, modulation, and stable recording and reading properties.
ST phase change optical recording material; Raman shift optical recording
material; indium silver tellurium antimony optical recording
IT Optical disks
Optical recording materials
(phase change-type optical recording material contg. indium silver
tellurium antimony compd.)
IT 197725-27-2 197725-28-3 197725-30-7 197725-31-8 ***209473-64-3***
209473-65-4
RL: DEV (Device component use); USES (Uses)
(phase change-type optical recording material contg. indium silver
tellurium antimony compd.)

=> d his

(FILE 'HOME' ENTERED AT 09:45:22 ON 03 FEB 2006)

FILE 'CAPLUS' ENTERED AT 09:45:28 ON 03 FEB 2006
L1 1 S US 2004-0053166/PN

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     FILE 'REGISTRY' ENTERED AT 09:45:56 ON 03 FEB 2006

     FILE 'CAPLUS' ENTERED AT 09:46:03 ON 03 FEB 2006
L2                TRA L1 1- RN :        3 TERMS

     FILE 'REGISTRY' ENTERED AT 09:46:04 ON 03 FEB 2006
L3              3 SEA L2
L4              3 S L3
L5           2188 S AG 5-6/MAC
L6           2253 S IN 4-5/MAC
L7            758 S SB 60-63/MAC
L8            794 S TE 27-31/MAC
L9             17 S L5 AND L6 AND L7 AND L8

     FILE 'CAPLUS' ENTERED AT 09:48:45 ON 03 FEB 2006
L10            22 S L9

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COST IN U.S. DOLLARS                                  SINCE FILE      TOTAL
                                                           ENTRY    SESSION
FULL ESTIMATED COST                                        68.00     103.17

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)            SINCE FILE      TOTAL
                                                           ENTRY    SESSION
CA SUBSCRIBER PRICE                                       -16.50     -16.50

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Do you wish to use the same loginid and password?
Enter choice (y/N):
Enter new loginid (or press [Enter] for ssspat1756mja):
Enter new password:

LOGINID:
LOGINID:ssspta1756mja

PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2


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 NEWS  4  DEC 14  2006 MeSH terms loaded in MEDLINE/LMEDLINE
 NEWS  5  DEC 14  2006 MeSH terms loaded for MEDLINE file segment of TOXCENTER
 NEWS  6  DEC 14  CA/CAplus to be enhanced with updated IPC codes
 NEWS  7  DEC 21  IPC search and display fields enhanced in CA/CAplus with the
                  IPC reform
 NEWS  8  DEC 23  New IPC8 SEARCH, DISPLAY, and SELECT fields in USPATFULL/
                  USPAT2
 NEWS  9  JAN 13  IPC 8 searching in IFIPAT, IFIUDB, and IFICDB
 NEWS 10  JAN 13  New IPC 8 SEARCH, DISPLAY, and SELECT enhancements added to
                  INPADOC
 NEWS 11  JAN 17  Pre-1988 INPI data added to MARPAT
 NEWS 12  JAN 17  IPC 8 in the WPI family of databases including WPIFV
 NEWS 13  JAN 30  Saved answer limit increased
 NEWS 14  JAN 31  Monthly current-awareness alert (SDI) frequency
                  added to TULSA

 NEWS EXPRESS  JANUARY 03 CURRENT VERSION FOR WINDOWS IS V8.01,
               CURRENT MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 19 DECEMBER 2005.
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FILE 'HOME' ENTERED AT 08:34:21 ON 03 FEB 2006

=> file caplus, inspec
COST IN U.S. DOLLARS                                     SINCE FILE      TOTAL
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=> s ((optical or laser or information)(5a)(med? or disk or disc))
L1       95839 ((OPTICAL OR LASER OR INFORMATION)(5A)(MED? OR DISK OR DISC))

=>

=> s l1 and hexagonal
L2          97 L1 AND HEXAGONAL

=> s l2 and a7
L3           2 L2 AND A7

=> d all 1-2

L3   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2004:523766  CAPLUS
DN   142:439644
ED   Entered STN:  30 Jun 2004
TI   Ferroelectric catastrophe: beyond nanometre-scale optical resolution
AU   Tominaga, Junji; Shima, Takayuki; Kuwahara, Masashi; Fukaya, Toshio;
     Kolobov, Alexander; Nakano, Takashi
CS   Centre for Applied Near-Field Optics, National Institute of Advanced
     Industrial Science and Technology, Tsukuba, 305-8562, Japan
SO   Nanotechnology (2004), 15(5), 411-415
     CODEN: NNOTER; ISSN: 0957-4484
PB   Institute of Physics Publishing
DT   Journal
LA   English
CC   76-8 (Electric Phenomena)
AB   The optical diffraction limit is rigidly detd. as a simple equation of
     wavelength .lambda. and lens numerical aperture NA (.ltoreq.1):
     .lambda./2/NA.  In this paper, we report that Ag5.8In4.4Sb61.0Te28.8 and
     Ge2Sb2Te5 chalcogenide thin films, which are typical of optical recording
     materials used in digital versatile disks (DVDs), enable a resoln. of
     under .lambda./10 due to their ferroelec. properties.  In the
     Ag5.8In4.4Sb61.0Te28.8 film this optical super-resoln. can be obsd.
     between 350 and 400.degree., resulting in a second phase transition from a
       ***hexagonal***   (  ***A7***   belonging to R-3m) to a rhombohedral
     structure of R32 or R3m.  In Ge2Sb2Te5, the temp. range is much wider,
     between 250 and 450.degree., which is also due to a second phase
     transition from a NaCl-type fcc to a   ***hexagonal***   structure.
ST   ferroelec catastrophe nanometer scale optical resoln chalcogenide thin
     film
IT   Films
        (elec. conductive; second phase transition of chalcogenides and dynamic
        anal. on rotating   ***optical***     ***disk***   inducing
        super-resoln. effect nanometer-scale optical resoln.)
IT   Electric conductors
        (films; second phase transition of chalcogenides and dynamic anal. on
        rotating   ***optical***     ***disk***   inducing super-resoln. effect
        nanometer-scale optical resoln.)
IT   Magnetic disks
        (hard; second phase transition of chalcogenides and dynamic anal. on
```

rotating ***optical*** ***disk*** inducing super-resoln. effect
nanometer-scale optical resoln.)
IT Ferroelectric materials
Ferroelectricity
Optical diffraction
Optical recording materials
(second phase transition of chalcogenides and dynamic anal. on rotating
optical ***disk*** inducing super-resoln. effect
nanometer-scale optical resoln.)
IT Chalcogenides
RL: DEV (Device component use); PRP (Properties); TEM (Technical or
engineered material use); USES (Uses)
(thin film; second phase transition of chalcogenides and dynamic anal.
on rotating ***optical*** ***disk*** inducing super-resoln.
effect nanometer-scale optical resoln.)
IT 16150-49-5, Antimony germanium telluride (Sb2Ge2Te5) 850907-91-4
RL: DEV (Device component use); PRP (Properties); TEM (Technical or
engineered material use); USES (Uses)
(second phase transition of chalcogenides and dynamic anal. on rotating
optical ***disk*** inducing super-resoln. effect
nanometer-scale optical resoln.)
RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L3 ANSWER 2 OF 2 INSPEC (C) 2006 IEE on STN
AN 2004:7897319 INSPEC DN A2004-08-4280T-008; B2004-04-4120-025
TI Ferroelectric catastrophe: beyond nanometre-scale optical resolution.
AU Tominaga, J.; Shima, T.; Kuwahara, M.; Fukaya, T.; Kolobov, A.; Nakano, T.
(Centre for Appl. Near-Field Opt., Nat. Inst. of Adv. Ind. Sci. &
Technol., Tsukuba, Japan)
SO Nanotechnology (May 2004) vol.15, no.5, p.411-15. 24 refs.
Doc. No.: S0957-4484(04)67813-5
Published by: IOP Publishing
Price: CCCC 0957-4484/04/050411+05$30.00
CODEN: NNOTER ISSN: 0957-4484
SICI: 0957-4484(200405)15:5L.411:FCBN;1-H
DT Journal
TC Experimental
CY United Kingdom
LA English
AB The optical diffraction limit is rigidly determined as a simple equation
of wavelength lambda and lens numerical aperture NA (<or=1): lambda /2/NA.
In this paper, we report that Ag5.8In4.4Sb61.0Te28.8 and Ge2Sb2Te5
chalcogenide thin films, which are typical of optical recording materials
used in digital versatile discs (DVDs), enable a resolution of under
lambda /10 due to their ferroelectric properties. In the
Ag5.8In4.4Sb61.0Te28.8 film it was found that this optical

super-resolution can be observed between 350 and 400 degrees C, resulting in a second phase transition from a ***hexagonal*** (***A7*** belonging to R3m) to a rhombohedral structure of R32 or R3m. In Ge2Sb2Te5, on the other hand, the temperature range is much wider, between 250 and 450 degrees C, which is also due to a second phase transition from a NaCl-type fcc to a ***hexagonal*** structure.

CC A4280T Optical storage and retrieval; A7780B Ferroelectric transitions and Curie point; A4270Y Other optical materials; B4120 Optical storage and retrieval; B2810F Piezoelectric and ferroelectric materials; B4110 Optical materials

CT ANTIMONY COMPOUNDS; DIFFERENTIAL SCANNING CALORIMETRY; DIGITAL VERSATILE DISCS; FERROELECTRIC CURIE TEMPERATURE; FERROELECTRIC THIN FILMS; FERROELECTRIC TRANSITIONS; GERMANIUM COMPOUNDS; INDIUM COMPOUNDS; INTERNAL STRESSES; OPTICAL FILMS; OPTICAL RESOLVING POWER; SILVER COMPOUNDS

ST optical diffraction limit; chalcogenide thin films; optical recording materials; digital versatile disc; ferroelectric catastrophe; optical superresolution; ***hexagonal to rhombohedral phase-transition*** ; second phase-transition; near-field optics; ***super-RENS optical*** *** disk*** ; DSC analysis; internal stress condition; Curie temperature; 250 to 450 C; Ge2Sb2Te5; Ag5.8In4.4Sb61.0Te28.8

CHI Ge2Sb2Te5 ss, Ge2 ss, Sb2 ss, Te5 ss, Ge ss, Sb ss, Te ss; Ag5.8In4.4Sb61.0Te28.8 ss, Sb61.0 ss, Te28.8 ss, Ag5.8 ss, In4.4 ss, Ag ss, In ss, Sb ss, Te ss

PHP temperature 5.23E+02 to 7.23E+02 K

ET Ag*In*Sb*Te; Ag sy 4; sy 4; In sy 4; Sb sy 4; Te sy 4; Ag5.8In4.4Sb61.0Te28.8; Ag cp; cp; In cp; Sb cp; Te cp; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge2Sb2Te5; Ge cp; C; Cl*Na; NaCl; Na cp; Cl cp; Ge2Sb2Te; Ge; Sb; Te; Ag5.8In4.4Sb61.0Te; Ag; In

```
=> s l2 not l3
L4          95 L2 NOT L3

=> d all 1-95
```

L4 ANSWER 1 OF 95 CAPLUS

AN 2005:568452 CAPLUS
ED Entered STN: 01 Jul 2005

TI ***Hexagonal*** Cs2S2O6 crystals - A new high-gain SRS-active material

AU Kaminskii, Alexander A.; Haussuehl, Eiken; Haussuehl, Siegfried; Hulliger, Juerg; Eichler, Hans J.
CS Institute of Crystallography, Russian Academy of Sciences, Moscow, 119333, Russia

SO Optics Communications (2005), 252(1-3), 91-96
CODEN: OPCOB8; ISSN: 0030-4018
PB Elsevier B.V.
DT Journal
LA English

CC 73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB High-gain stimulated Raman scattering in ***hexagonal*** Cs2S2O6 single crystals has been obsd. for the first time. All measured multiple Stokes and anti-Stokes generation wavelengths are identified and attributed to the .chi.(3) active vibration mode (.omega.SRS1 .apprxeq. 1091 cm-1) of this cesium dithionate. We classify the Cs2S2O6 compd. as promising ***medium*** for Raman ***laser*** converters in the visible and near-IR.

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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L4   ANSWER 2 OF 95  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:546922  CAPLUS
DN   143:68433
ED   Entered STN:  24 Jun 2005
TI   Phase-change recording media based on the Ga-Sb-Te system for ultra-high
     density optical recording
IN   Chin, Tsung Shune; Lee, Chien Ming
PA   Taiwan
SO   U.S. Pat. Appl. Publ., 18 pp.
     CODEN: USXXCO
DT   Patent
LA   English
IC   ICM  B32B003-02
INCL 428064400
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
     Section cross-reference(s): 57
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.       DATE
     ---------------     ----   --------   --------------------  --------
PI   US 2005136209        A1    20050623   US 2004-13470         20041217
PRAI TW 2003-92136070     A     20031219
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  ----------------------------------------------
 US 2005136209   ICM    B32B003-02
                 INCL   428064400
                 IPCI   B32B0003-02 [ICM,7]
                 NCL    428/064.400
AB   This invention discloses a novel rewritable phase-change recording
       ***medium***   for   ***optical***   data storage, which is based on the
     GaSbTe ternary alloy system.  The designed compns. reside on the
     Sb7Te3-GaSb and Sb2Te3-GaSb pseudo-binary tie-lines, and the claimed
     region can be expressed by the formula (SbxTe100-x)1-z(GaySb100-y)z,
     35.ltoreq.x.ltoreq.80, 40.ltoreq.y.ltoreq.50, 0.05.ltoreq.z.ltoreq.0.9.
     The crystd. phase of the GaSbTe films is a single phase after laser
     annealing, and the crystal structure is   ***hexagonal***   with
     continuous variation in lattice consts.  The lattice parameters, a is from
     4.255 to 4.313 .ANG.; and c is from 11.200 .ANG.; to 11.657 .ANG.;,
     corresponding to the c/a ratio 2.60 to 2.73.  The crystn. kinetics shows
     increased crystn. temp. (181 to 327.degree.C) and activation energy (2.8
     to 6.5 eV) with increasing GaSb content.  The Sb7Te3-rich compns. in the
     GaSbTe recording media are characteristic of enhanced recrystn., while
     those with increasing GaSb content are indicative of higher rate of
     crystal growth and better erasability.  The compns. around Ga2Sb5Te3
     exhibit the features of nearly complete erasure and stable cycling
     performance.
ST   phase change recording media gallium antimony tellurium system ultra
IT   Optical recording materials
        (erasable; phase-change recording media based on Ga-Sb-Te system for
        ultra-high d. optical recording)
IT   Telluride glasses
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PRP (Properties); PYP (Physical process); PROC (Process)
        (phase-change recording media based on Ga-Sb-Te system for ultra-high
        d. optical recording)
IT   7440-36-0, Antimony, properties   7440-55-3, Gallium, properties
     13494-80-9, Tellurium, properties   37232-84-1
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
     process); PRP (Properties); PYP (Physical process); PROC (Process)
        (phase-change recording media based on Ga-Sb-Te system for ultra-high
        d. optical recording)

L4   ANSWER 3 OF 95  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:57773  CAPLUS
DN   142:144172
ED   Entered STN:  21 Jan 2005
TI   Photoelectric device for   ***optical***    ***disk***   apparatus
IN   Kawaguchi, Yusuke; Oshima, Yuichi
PA   Hitachi Cable, Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 7 pp.
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CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L031-10
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005019578	A2	20050120	JP 2003-180482	20030625
PRAI	JP 2003-180482		20030625		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005019578	ICM	H01L031-10
	IPCI	H01L0031-10 [ICM,7]
	FTERM	5F049/MA02; 5F049/MA03; 5F049/MA04; 5F049/MB07; 5F049/NA04; 5F049/NA05; 5F049/QA16; 5F049/QA20; 5F049/SS01; 5F049/SS02

AB The title device has a photoreceptor layer between a p-type GaN semiconductor and a n-type GaN semiconductor on a substrate, wherein the back surface of the substrate has patterned with multiple ***hexagonal*** pyramids or multiple cones. The device receives little light from the back of the substrate and is suitable for ***optical*** ***disk*** recording app.
ST photoelec device ***optical*** ***disk*** substrate back
IT ***Optical*** ***disks***
Photodiodes
Photoelectric devices
(photoelec. device for ***optical*** ***disk*** app.)
IT Photoelectric devices
Thyristors
(photothyristors; photoelec. device for ***optical*** ***disk*** app.)
IT 24304-00-5, Aluminum nitride 25617-97-4, Gallium nitride
RL: DEV (Device component use); USES (Uses)
(photoelec. device for ***optical*** ***disk*** app.)

L4 ANSWER 4 OF 95 CAPLUS
AN 2004:1007131 CAPLUS
DN 142:143168
ED Entered STN: 23 Nov 2004
TI Quantum confinement effect of nanocrystalline GaN films prepared by pulsed-laser ablation under various Ar pressures
AU Yoon, Jong-Won; Sasaki, Takeshi; Roh, Cheong Hyun; Shim, Seung Hwan; Shim, Kwang Bo; Koshizaki, Naoto
CS Nanoarchitectonics Research Center (NARC), National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, 305-8565, Japan
SO Thin Solid Films (2004), Volume Date 2005, 471(1-2), 273-276
CODEN: THSFAP; ISSN: 0040-6090
PB Elsevier B.V.
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Pulsed-laser deposition (PLD) was performed under various Ar pressures to prep. nanocryst. GaN films without substrate heating or any post-annealing treatment. The XRD pattern and selected area electron diffraction indicated that the deposited films were ***hexagonal*** GaN with wurtzite structure. High-resoln. transmission electron microscopic observation revealed that the particles in GaN films deposited in Ar ambient gas <50 Pa were smaller than the exciton Bohr radius of GaN (11 nm). Large blueshifts in optical bandgap of the films deposited at lower Ar pressures were obsd., indicating strong quantum confinement effects in small GaN particles.
ST quantum confinement nanocryst gallium nitride film; laser ablation deposition nitride argon pressure
IT Band gap
(optical; quantum confinement effect of nanocryst. GaN films prepd. by pulsed-laser ablation under various Ar pressures)

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IT   Electron diffraction
     Laser ablation
     Particle size
     Quantum size effect
     Surface structure
     UV and visible spectra
     X-ray diffraction
        (quantum confinement effect of nanocryst. GaN films prepd. by
        pulsed-laser ablation under various Ar pressures)
IT   7440-37-1, Argon, uses
     RL: NUU (Other use, unclassified); USES (Uses)
        (  ***laser***   ablation   ***medium***  ; quantum confinement effect
        of nanocryst. GaN films prepd. by pulsed-laser ablation under various
        Ar pressures)
IT   25617-97-4P, Gallium nitride
     RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)
        (quantum confinement effect of nanocryst. GaN films prepd. by
        pulsed-laser ablation under various Ar pressures)
RE.CNT  19    THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L4   ANSWER 5 OF 95  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2004:905320  CAPLUS
DN   141:386460
ED   Entered STN:  29 Oct 2004
TI   Phase-change   ***optical***   recording   ***disk***   that is compatible
     with a high transfer rate and has superior thermal stability in an
     amorphous phase
IN   Shingai, Hiroshi; Chihara, Hiroshi; Hirata, Hideki
PA   TDK Corporation, Japan
SO   U.S. Pat. Appl. Publ., 9 pp.
     CODEN: USXXCO
DT   Patent
LA   English
IC   ICM  G11B007-24
INCL 369094000; 369288000
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
FAN.CNT 1
     PATENT NO.            KIND   DATE        APPLICATION NO.        DATE
     ---------------       ----   --------    --------------------   --------
PI   US 2004213125          A1    20041028    US 2004-829355         20040422
     JP 2004322468          A2    20041118    JP 2003-120205         20030424
PRAI JP 2003-120205         A     20030424
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  ----------------------------------------------
 US 2004213125   ICM    G11B007-24
                 INCL   369094000; 369288000
                 IPCI   G11B0007-24 [ICM,7]
                 NCL    369/094.000
                 ECLA   G11B007/0045P; G11B007/243
 JP 2004322468   IPCI   B41M0005-26 [ICM,7]; G11B0007-24 [ICS,7]
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              FTERM  2H111/EA04; 2H111/EA23; 2H111/EA39; 2H111/FB09;
                     2H111/FB12; 2H111/FB20; 5D029/JA01
AB   Phase-change   ***optical***   recording   ***disk***   is described that
     is compatible with a high transfer rate and has superior thermal stability
     in an amorphous phase.  Thus, the recording layer includes at least Sb,
     Tb, and Te.  When indexing as a   ***hexagonal***   lattice has been
     performed in a state corresponding to the crystal phase, the recording
     layer has a structure where an axial ratio c/a of a c-axis length to an
     a-axis length in the   ***hexagonal***   lattice is between 2.590 and
     2.702 inclusive.
ST   rewritable   ***optical***   phase change   ***disk***   terbium antimony
     tellurium
IT   Amorphous structure
     Crystal morphology
     Thermal stability
     X-ray diffraction
        (phase-change   ***optical***   recording   ***disk***   that is
        compatible with high transfer rate and has superior thermal stability
        in amorphous phase)
IT   Erasable   ***optical***    ***disks***
        (phase-change; phase-change   ***optical***   recording   ***disk***
        that is compatible with high transfer rate and has superior thermal
        stability in amorphous phase)
IT   1327-50-0D, Antimony telluride, terbium substituted
     RL: DEV (Device component use); USES (Uses)
        (phase-change   ***optical***   recording   ***disk***   that is
        compatible with high transfer rate and has superior thermal stability
        in amorphous phase)

L4   ANSWER 6 OF 95  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2004:589510  CAPLUS
DN   141:127504
ED   Entered STN:  23 Jul 2004
TI   Manufacture of alkali aluminosilicate transparent glass ceramics with ZnO
     crystal phase for optical applications
IN   Pinckney, Linda
PA   Corning Incorporated, USA
SO   PCT Int. Appl., 22 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
IC   ICM  C03C010-02
     ICS  C03C004-12
CC   57-1 (Ceramics)
     Section cross-reference(s): 73
FAN.CNT 2
     PATENT NO.          KIND   DATE       APPLICATION NO.       DATE
     ---------------     ----   --------   -------------------   --------
PI   WO 2004060825        A1    20040722   WO 2003-US40754       20031219
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
             CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
             GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
             LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO,
             NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,
             TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW
         RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
             IT, LU, MC, NL, PT, RO, SE, SI, SK, TR
     EP 1590304           A1    20051102   EP 2003-814895        20031219
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
PRAI US 2002-437294P      P     20021231
     WO 2003-US40754      W     20031219
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 --------------  -----  ----------------------------------------------
 WO 2004060825   ICM    C03C010-02
                 ICS    C03C004-12
                 IPCI   C03C0010-02 [ICM,7]; C03C0004-12 [ICS,7]
                 ECLA   C03C004/12; C03C010/00E
 EP 1590304      IPCI   C03C0010-02 [ICM,7]; C03C0004-12 [ICS,7]
                 ECLA   C03C004/12; C03C010/00E
AB   Transparent zinc alkali aluminosilicate glass-ceramics are manufd. with a
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compn. in the SiO2-Al2O3-ZnO-K2O-Ga2O3-Na2O system comprising, in wt.% on oxide basis, 25-50% SiO2, 15-45% ZnO, 0-26% Al2O3, 0-25% K2O, 0-10% Na2O, 0-32% Ga2O3, with (K2O+Na2O) > 10% and (Al2O3+Ga2O3) >10%, the glass ceramic microstructure contg. a crystal phase comprising at least 15 wt.% of ***hexagonal*** ZnO crystals. The glass-ceramics are suitable for use in ***optical*** fibers, gain or ***laser*** ***medium*** , amplifier components or saturable absorbers.

ST alkali aluminosilicate transparent glass ceramic zinc oxide crystal optics

IT Optical amplifiers
Optical fibers
Saturable absorbers
(glass-ceramics for; manuf. of alkali aluminosilicate transparent glass ceramics with ZnO crystal phase for optical applications)

IT Glass ceramics
(zinc alkali aluminosilicate glass-ceramics; manuf. of alkali aluminosilicate transparent glass ceramics with ZnO crystal phase for optical applications)

IT 1314-13-2, Zinc oxide (ZnO), processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(crystals in glass-ceramics; manuf. of alkali aluminosilicate transparent glass ceramics with ZnO crystal phase for optical applications)

IT 1313-59-3, Sodium oxide, processes 1344-28-1, Alumina, processes 7631-86-9, Silica, processes 12024-21-4, Gallium oxide (Ga2O3) 12136-45-7, Potassium oxide, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(in alkali zinc aluminosilicate glass-ceramics; manuf. of alkali aluminosilicate transparent glass ceramics with ZnO crystal phase for optical applications)

L4 ANSWER 7 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:589212 CAPLUS
DN 141:127503
ED Entered STN: 23 Jul 2004
TI Preparation of transparent gallium aluminosilicate glass ceramics with ***hexagonal*** ZnO nanocrystals
IN Pinckney, Linda R.
PA Corning Incorporated, USA
SO U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM C03C013-04
ICS C03C010-02
INCL 501010000; 501037000; 065033700; 065033900
CC 57-1 (Ceramics)
Section cross-reference(s): 73
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004142809	A1	20040722	US 2003-747544	20031229
	US 6936555	B2	20050830		
PRAI	US 2002-437294P	P	20021231		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2004142809	ICM	C03C013-04
	ICS	C03C010-02
	INCL	501010000; 501037000; 065033700; 065033900
	IPCI	C03C0013-04 [ICM,7]; C03C0010-02 [ICS,7]
	NCL	501/010.000
	ECLA	C03C004/12; C03C010/00E

AB Transparent glass-ceramics with an alumino-gallate spinel crystal phase and compns. in the SiO2-Al2O3-ZnO-K2O-Ga2O3-Na2O system comprise, in wt.% on oxide basis, 25-50% SiO2, 15-45% ZnO, 0-26% Al2O3, 0-25% K2O, 0-10% Na2O, 0-32% Ga2O3 with (K2O+Na2O) >10%, (Al2O3+Ga2O3) >10% and the glass ceramic microstructure contg. a crystal phase comprising at least 15 wt.% of ***hexagonal*** ZnO crystals. The transparent glass-ceramics produced can be used as optical component such as ***optical*** fibers, gain or ***laser*** ***medium*** , ***optical***

amplifier component, saturable absorbers.
ST   zinc oxide crystal gallium aluminosilicate optical glass ceramic
IT   Glass ceramics
   (gallium zinc aluminosilicate glass ceramics; prepn. of transparent gallium aluminosilicate glass ceramics with ***hexagonal*** ZnO nanocrystals)
IT   Optical amplifiers
Optical fibers
Saturable absorbers
   (glass-ceramics for; prepn. of transparent gallium aluminosilicate glass ceramics with ***hexagonal*** ZnO nanocrystals)
IT   ***Optical*** gain
   (***medium*** , glass-ceramics for; prepn. of transparent gallium aluminosilicate glass ceramics with ***hexagonal*** ZnO nanocrystals)
IT   1313-59-3, Sodium oxide, processes 1314-13-2, Zinc oxide (ZnO), processes 1344-28-1, Alumina, processes 7631-86-9, Silica, processes 12024-21-4, Gallium oxide (Ga2O3) 12136-45-7, Potassium oxide, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
   (in gallium zinc aluminosilicate glass ceramics; prepn. of transparent gallium aluminosilicate glass ceramics with ***hexagonal*** ZnO nanocrystals)

L4   ANSWER 8 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN   2004:158218 CAPLUS
DN   140:325401
ED   Entered STN: 27 Feb 2004
TI   Preparation of Layered Zinc Hydroxide/Surfactant Nanocomposite by Pulsed-***Laser*** Ablation in a Liquid ***Medium***
AU   Liang, Changhao; Shimizu, Yoshiki; Masuda, Mitsutoshi; Sasaki, Takeshi; Koshizaki, Naoto
CS   Nanoarchitectonics Research Center (NARC), National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, 305-8565, Japan
SO   Chemistry of Materials (2004), 16(6), 963-965
CODEN: CMATEX; ISSN: 0897-4756
PB   American Chemical Society
DT   Journal
LA   English
CC   57-2 (Ceramics)
AB   A layered zinc hydroxide/surfactant composite was prepd. by pulsed laser ablation of a Zn plate in an aq. soln. of the surfactant. The products were octagonal platelets with a single cryst. form in ***hexagonal*** sym. The detailed structure was analyzed. In the composite formation processes, the charged inorg. zinc hydroxide species were produced step-by-step by the strong reaction between the ablated Zn species and the water mols., which concurrently experience assembling with surfactant mols. controlled by the charge-matching mechanism. The preferred coordination of hydrophilic headgroups with zinc coordination sites prevents further reaction from forming ZnO nanoparticles. Our unique and simple process, which is directly triggered by metal species without any chem. modifications, enables the generation of new types of hybrid composites by using other applicable metal targets and surfactants.
ST   zinc hydroxide surfactant layered nanocomposite prepn property; org inorg hybrid material zinc hydroxide surfactant layered nanocomposite
IT   Surfactants
   (composites with zinc hydroxide, layered; laser ablation of zinc target in aq. surfactant soln. in prepn. of layered zinc hydroxide/surfactant nanocomposites)
IT   Laser ablation
Self-assembly
   (laser ablation of zinc target in aq. surfactant soln. in prepn. of layered zinc hydroxide/surfactant nanocomposites)
IT   Hybrid organic-inorganic materials
Nanocomposites
   (zinc hydroxide-sodium dodecyl sulfate layered; laser ablation of zinc target in aq. surfactant soln. in prepn. of layered zinc hydroxide/surfactant nanocomposites)
IT   20427-58-1P, Zinc Hydroxide
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
   (composites with surfactant, layered; laser ablation of zinc target in

aq. surfactant soln. in prepn. of layered zinc hydroxide/surfactant nanocomposites)
IT 151-21-3, Sodium dodecyl sulfate, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(composites with zinc hydroxide, layered; laser ablation of zinc target in aq. surfactant soln. in prepn. of layered zinc hydroxide/surfactant nanocomposites)
IT 7440-66-6, Zinc, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(target; laser ablation of zinc target in aq. surfactant soln. in prepn. of layered zinc hydroxide/surfactant nanocomposites)
RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L4 ANSWER 9 OF 95 CAPLUS
AN 2004:60937 CAPLUS
DN 141:61806
ED Entered STN: 26 Jan 2004
TI Picture screen polishing disk and its manufacture process
IN Zhang, Youyi
PA Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 13 pp.
CODEN: CNXXEV
DT Patent
LA Chinese
IC ICM B24D013-14
ICS B24D018-00; C09K003-14
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1357433	A	20020710	CN 2000-134024	20001207
PRAI	CN 2000-134024		20001207		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
CN 1357433	ICM	B24D013-14
	ICS	B24D018-00; C09K003-14

IPCI B24D0013-14 [ICM,7]; B24D0018-00 [ICS,7]; C09K0003-14 [ICS,7]

AB The title disk consists of grinding head, chassis, riser vent, groove, storing hole, and feeding hole. The grinding head is prepd. by using nylon non-woven cloth, and treating by a immersing glue, with ***hexagonal*** prism shape. The grinding head is bond with chassis by binder. The chassis has three-layer structure: sponge rubber plank on the bottom of chassis, wrapped rubber plank over the chassis, and sponge rubber strip layer between the sponge rubber plank and wrapped rubber plank. The strip layer is orthogonally triangular, and the angle between its sloped edge and sponge rubber plank is 300. Every group has three riser vents with equal ties. The top surface of the riser vents are inside the hexagon of bottom surface of grinding head, installed over the sponge rubber plank of chassis, and penetrates into the sponge rubber plank. The groove is installed between the grinding heads, and the depth of the groove is equal to height of grinding head. The width of groove is smaller than the side length of hexagon. The storing hole is on the top angle of grinding head, connected with the groove, and through the chassis. The feeding holes are 3-7 with equal ties, and installed in the center of polishing disk. The binder is composed of polyurethane resin 10-25, cyclohexanone 15-30, and butanone 50-65%. The immersing glue contains polyurethane resin 18-30, solvent DMF (DMF) 60-75, and sorbitol 4-10%.

ST picture screen polishing disk manuf

IT Polishing
(app.; picture screen polishing disk and manuf. process)

IT Tools
(grinding disks; picture screen polishing disk and manuf. process)

IT ***Optical*** imaging devices
Polishing
(picture screen polishing ***disk*** and manuf. process)

IT Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(picture screen polishing disk and manuf. process)

IT 50-70-4, Sorbitol, uses 68-12-2, DMF, uses 78-93-3, Butanone, uses 108-94-1, Cyclohexanone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(picture screen polishing disk and manuf. process)

L4 ANSWER 10 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:660587 CAPLUS

DN 140:34721

ED Entered STN: 25 Aug 2003

TI TEM of epitaxial thin films controlled by planes extending (near) normal to interface; with application to two methods to reduce crystal orientations in polycrystalline magnetic media

AU MoberlyChan, Warren; Dorsey, Paul

CS Center for Imaging and Mesoscale Structures at Harvard University, Cambridge, MA, 02138, USA

SO Journal of the European Ceramic Society (2003), 23(15), 2879-2891
CODEN: JECSER; ISSN: 0955-2219

PB Elsevier Science Ltd.

DT Journal

LA English

CC 77-1 (Magnetic Phenomena)
Section cross-reference(s): 56

AB This work is a study of heteroepitaxial interfaces as applied to multilayer-thin films for magnetic ***information*** storage ***media*** . With a goal to develop a film crystallog. that optimizes the alignment of magnetic dipoles to coincide with the write/read signal of the recording head, two TEM observations have elucidated a better understanding of what controls heteroepitaxial interfaces. The classical approach to establishing "lattice matching" of interfaces is to model the top plane of atoms of the substrate and then align the next plane of atoms in the subsequently deposited film, i.e. plane A and plane B should "match" (with minimal misfit), with both planes being parallel to the interface. Such mechanism is valid for idealized slow MBE growth where the planes remain atomically flat. However, most film deposition conditions quickly violate this atomically flat configuration. Here growth on a roughened interface is shown to be controlled by the matching of planes that extend (normal or near-normal) across the interface. A second classical observation is the nucleation of bi-crystals, which

naturally increases the no. of crystal orientations in subsequent films. However, this work exhibits two cases of reducing orientations: one case has a 3-D isotropically oriented cubic film followed by a ***hexagonal*** film with 2-&-1/4-D isotropy, and a second case where a 2-D random cubic film is followed by a ***hexagonal*** film with 1-&-1/2-D isotropy. The understanding and control of these heteroepitaxial interfaces enables redn. of film orientations to enhance properties, such as 100 Gigabit per-square-inch magnetic recording.

ST epitaxy film magnetic recording disk

IT Magnetic recording
Molecular beam epitaxy
Texture (metallographic)
(TEM of epitaxial thin films controlled by planes extending normal to interface with application to two methods to reduce crystal orientations in polycryst. magnetic media)

IT Magnetic moment
(dipole; TEM of epitaxial thin films controlled by planes extending normal to interface with application to two methods to reduce crystal orientations in polycryst. magnetic media)

IT Magnetic disks
(hard; TEM of epitaxial thin films controlled by planes extending normal to interface with application to two methods to reduce crystal orientations in polycryst. magnetic media)

IT Cobalt alloy, base
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(recording media component; TEM of epitaxial thin films controlled by planes extending normal to interface with application to two methods to reduce crystal orientations in polycryst. magnetic media)

IT 7440-47-3, Chromium, properties 11146-55-7 12003-78-0, AlNi
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(recording media component; TEM of epitaxial thin films controlled by planes extending normal to interface with application to two methods to reduce crystal orientations in polycryst. magnetic media)

IT 7429-90-5, Aluminum, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(recording media substrate; TEM of epitaxial thin films controlled by planes extending normal to interface with application to two methods to reduce crystal orientations in polycryst. magnetic media)

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L4 ANSWER 11 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:352876 CAPLUS
DN 140:10531
ED Entered STN: 09 May 2003
TI Crystallization in eutectic materials of phase-change optical memory

AU Okuda, Masahiro; Inaba, Hirokazu; Usuda, Shouji
CS Okuda Technical Office, 1-chome 2-27 Mozu Umemachi sakai, Osaka, 591-8032,

Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (2003), 5060(Optical Storage), 145-149
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 75
AB For the materials of eutectic compn. (AgInSbTe) using as the phase change optical memory, Sb rich recording layer have been utilized in order to the rapid crystn. But, the mechanism of excess Sb addn. has not been clear, because a eutectic material is thought to cause the phase sepn. in its solidification process. Recently, it was reported that a melt-quenched cryst. states of eutectic AgInSbTe and SbTe with excess Sb has a quasi-equil. sate with single phase ***hexagonal*** structure based Sb(R3m) and some Sb atoms are randomly replaced with Te atoms. The authors report the excess Sb effect for the dynamics of rapid crystn. in eutectic amorphous films. This crystn. mechanism describe the propagation with high velocity in the interface sepg. the cryst. and amorphous phase for AgInSbTe and Ge(Sb..Te3)+Sb materials. From these anal., it is clear that the crystn. is grown up in the boundary of amorphous-cryst. region of eutectic materials, which is different from the stoichiometric Ge2Sb2Te5 media. Under favorable conditions, a self sustained (explosive) process results by laser irradn. Then, once crystn. has been initiated in the amorphous-cryst. region, the entire amorphous films has been crystd.
ST crystn eutectic material phase change optical memory recording; silver indium antimony tellurium crystn optical recording
IT Crystallization
(effect of Sb excess on dynamics of rapid crystn. in eutectic amorphous AgInSbTe films of phase-change optical recording material)
IT ***Optical*** ***disks***
(effect of Sb excess on dynamics of rapid crystn. in eutectic amorphous AgInSbTe films of phase-change optical recording material in relation to)
IT Optical recording materials
(phase-change; effect of Sb excess on dynamics of rapid crystn. in eutectic amorphous AgInSbTe films of phase-change optical recording material)
IT 149087-96-7, Antimony indium silver telluride 158282-93-0
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(effect of Sb excess on dynamics of rapid crystn. in eutectic amorphous AgInSbTe films of phase-change optical recording material)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L4 ANSWER 12 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:904962 CAPLUS
DN 137:390844
ED Entered STN: 29 Nov 2002
TI Laser structure, light emitter, display device and light amplifier and production of laser structure
IN Toda, Atsushi; Ishibashi, Akira
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 23 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-06
ICS H01S003-17
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	JP 2002344047	A2	20021129	JP 2001-150069	20010518
	US 2003016718	A1	20030123	US 2002-145361	20020514
PRAI	JP 2001-150069	A	20010518		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2002344047	ICM	H01S003-06
	ICS	H01S003-17
	IPCI	H01S0003-06 [ICM,7]; H01S0003-17 [ICS,7]
US 2003016718	IPCI	H01S0003-14 [ICM,7]; H01S0003-06 [ICS,7]
	IPCR	H01S0003-06 [I,A]; H01S0003-06 [I,C]; H01S0003-063 [N,A]; H01S0003-07 [I,A]; H01S0003-091 [I,A]; H01S0003-091 [I,C]; H01S0003-0955 [I,C]; H01S0003-0959 [I,A]
	NCL	372/066.000
	ECLA	H01S003/06; H01S003/07; H01S003/091; H01S003/0959

AB The invention refers to a laser structure wherein particles in a fcc. lattice or a fine ***hexagonal*** lattice is used for Bragg reflection, and a dye or electrochromic material is used as a ***laser*** ***medium*** , for a device with wide applications.

ST waveguide laser periodic structure Bragg reflection

IT Bragg reflectors
Periodic structures
(laser structure, light emitter, display device and light amplifier and prodn. of laser structure)

IT Waveguides
(laser; laser structure, light emitter, display device and light amplifier and prodn. of laser structure)

IT Lasers
(waveguide; laser structure, light emitter, display device and light amplifier and prodn. of laser structure)

L4 ANSWER 13 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:504072 CAPLUS

DN 137:54360

ED Entered STN: 05 Jul 2002

TI Semiconductor laser elements with controlled cleavage surfaces, method for their manufacture, and apparatus using them for outputting ***informations*** in ***optical*** ***disks***

IN Yamazaki, Yukio

PA Sharp Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01S005-02
ICS H01S005-343

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	---------------	----	--------	--------------------	--------
PI	JP 2002190635	A2	20020705	JP 2000-386992	20001220
	US 2002105986	A1	20020808	US 2001-28175	20011220
PRAI	JP 2000-386992	A	20001220		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2002190635	ICM	H01S005-02
	ICS	H01S005-343
	IPCI	H01S0005-02 [ICM,7]; H01S0005-343 [ICS,7]
US 2002105986	IPCI	H01S0005-00 [ICM,7]
	IPCR	H01S0005-00 [I,C]; H01S0005-02 [N,A]; H01S0005-323 [I,A]; H01S0005-343 [N,A]
	NCL	372/045.010
	ECLA	H01S005/323B4

AB The element has a 1st semiconductor layer including a GaN substrate, a ***hexagonal*** nitride-contg. 2nd semiconductor layer including an

active layer, and a mirror facet formed by cleaving the 1st and 2nd layers so as to expose the both sides in the approx. identical surface, wherein the ratio of av. surface unevenness of the facet of the 2nd semiconductor layer region to that of the 1st semiconductor region is .ltoreq.1/2. The method contains forming a buffer layer (having thickness of .gtoreq.10 nm but .ltoreq.10 .mu.m, preferably) on a GaN substrate at a 1st temp., forming a ***hexagonal*** nitride semiconductor layer on the buffer layer at a 2nd temp. higher than the 1st temp., and dividing the resulting wafer at a line parallel to the cleavage surface of the semiconductor layer. The element gives an output app. with low bit error rate.

ST semiconductor laser element nitride cleavage surface; nitride mirror facet unevenness semiconductor laser; ***optical*** ***disk*** output app semiconductor ***laser***

IT Nitrides
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(***hexagonal*** , semiconductor layer; manuf. of semiconductor lasers with controlled cleavage surfaces for ***information*** output app. for ***optical*** ***disks***)

IT ***Optical*** ***disks***
Optical instruments
Semiconductor device fabrication
Semiconductor lasers
(manuf. of semiconductor ***lasers*** with controlled cleavage surfaces for ***information*** output app. for ***optical*** ***disks***)

IT 127575-65-9, Aluminum indium gallium nitride
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(buffer layer; manuf. of semiconductor lasers with controlled cleavage surfaces for ***information*** output app. for ***optical*** ***disks***)

IT 25617-97-4, Gallium nitride
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(substrate or semiconductor layer; manuf. of semiconductor lasers with controlled cleavage surfaces for ***information*** output app. for ***optical*** ***disks***)

L4 ANSWER 14 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:299451 CAPLUS
DN 137:131937
ED Entered STN: 22 Apr 2002
TI Material characterization and application of eutectic SbTe-based phase-change ***optical*** recording ***media***
AU Horie, Michikazu; Ohno, Takashi; Nobukuni, Natsuko; Kiyono, Kenjirou; Hashizume, Takao; Mizuno, Masaaki
CS Yokohama Information and Electronics Research Center, Storage Media Laboratory, Mitsubishi Chemical Corporation, Aoba-ku, Yokohama, 227-8502, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (2002), 4342(Optical Data Storage 2001), 76-87
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal; General Review
LA English
CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB A brief review is given on the material characterization and application of the Ge(Sb70Te30) + Sb alloy. A mechanism to enable fast cryst. growth is discussed based on its single phase, ***hexagonal*** cryst. structure. A competitive process of amorphization and re-crystn. during re-solidification is discussed with a simple simulation model, where it is suggested that continuous cryst. growth from the boundary of molten area assures no resoln. limit in the formation of amorphous mark edge. Two important concepts of 'enhanced re- crystn.' and '2T-period divided pulse strategy' are proposed to fully utilize this class of material. The enhanced re-crystn. realizes precise amorphous mark size control, realizing high d. multilevel recording. The 2T-period divided pulse

strategy resolves a pre-mature amorphization issue due to an insufficient cooling period in the case of over 100 MHz clock frequency for high speed recording. Finally, it is reported that 120 Mbps digital video recording and over 40 GB multi-level recording on CD size single layer are feasible. A review with refs.

ST review eutectic antimony telluride phase change optical recording material

IT Optical recording materials
(erasable, phase-change; material characterization and application of eutectic SbTe-based phase-change ***optical*** recording ***media***)

IT Amorphization
Crystallization
(material characterization and application of eutectic SbTe-based phase-change ***optical*** recording ***media***)

IT Erasable ***optical*** ***disks***
(phase-change; material characterization and application of eutectic SbTe-based phase-change ***optical*** recording ***media***)

IT 16150-49-5, Antimony germanium telluride(Sb2Ge2Te5) 81207-86-5 87715-69-3 127860-51-9, Antimony germanium telluride
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(material characterization and application of eutectic SbTe-based phase-change ***optical*** recording ***media***)

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L4 ANSWER 15 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:428957 CAPLUS
DN 135:202673
ED Entered STN: 14 Jun 2001
TI Patterned Block-Copolymer-Silica Mesostructures as Host ***Media*** for the ***Laser*** Dye Rhodamine 6G

AU Wirnsberger, Gernot; Yang, Peidong; Huang, Howard C.; Scott, Brian; Deng, Tao; Whitesides, George M.; Chmelka, Bradley F.; Stucky, Galen D.
CS Department of Chemistry, University of California, Santa Barbara, CA, 93106, USA

SO Journal of Physical Chemistry B (2001), 105(27), 6307-6313

CODEN: JPCBFK; ISSN: 1089-5647
PB American Chemical Society
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 36
AB Rhodamine 6G-doped mesostructured SiO2 is prepd. by an acidic sol-gel route using poly-b-poly(propylene oxide)-b-poly(ethylene oxide) (EOx-POy-EOx) block copolymer surfactants. Using low-refractive-index (n .apprx. 1.2) mesoporous SiO2 as a support, the synthesis is combined with soft lithog. to produce high-quality waveguides. This enables efficient waveguiding in the line-patterned rhodamine 6G-doped mesostructured domains, which have a higher refractive index than both the mesoporous support and cladding. For the structure-directing block copolymer surfactants used, (EO)20(PO)70(EO)20 (P123) and (EO)106(PO)70(EO)106 (F127), x-ray diffraction patterns and TEM reveal ***hexagonal*** mesophases, whose longitudinal cylinder axes are aligned predominantly parallel to the substrate plane. For samples made by micromolding-in-capillaries (MIMIC), the longitudinal axes are also aligned along the longitudinal waveguide axes. Samples made by micromolding also possess a high mesostructural order, though in the absence of an aligning flow field, their long-range order (ca. several hundred nanometers) is lower than for samples processed using the MIMIC technique. When optically pumped, the rhodamine 6G-doped waveguides exhibit amplified spontaneous emission with thresholds as low as .apprx.6 kW cm-2, substantially lower than rhodamine 6G-doped sol-gel glasses. This is attributed to the ability of the polymeric surfactant to co-assemble with the dye mols., thereby leading to high dye dispersions and reduced dye dimerization. Addnl., rhodamine 6G shows good photostability in the mesostructured waveguides, similar to that of rhodamine 6G in organically modified silicates.
ST waveguide optical rhodamine 6G dopant block copolymer silica mesostructure; ethylene oxide copolymer optical waveguide silica mesostructure rhodamine 6G; propylene oxide copolymer optical waveguide silica mesostructure rhodamine 6G; refractive index rhodamine 6G dopant block copolymer silica mesostructure; luminescence rhodamine 6G dopant block copolymer silica mesostructure waveguide; sol gel rhodamine 6G block copolymer silica mesostructure waveguide; XRD rhodamine 6G dopant block copolymer silica mesostructure waveguide; x ray diffraction block copolymer silica mesostructure rhodamine 6G; composite rhodamine 6G dopant block copolymer silica mesostructure waveguide

IT Mesophase
Surfactants
(block copolymer; patterned block-copolymer-silica mesostructures as host ***media*** for ***laser*** dye rhodamine 6G)

IT Polymers, properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(block; patterned block-copolymer-silica mesostructures as host ***media*** for ***laser*** dye rhodamine 6G)

IT Composites
Luminescence
Optical waveguides
Refractive index
Scanning electron microscopy
Sol-gel processing
Transmission electron microscopy
X-ray diffraction
(patterned block-copolymer-silica mesostructures as host ***media*** for ***laser*** dye rhodamine 6G)

IT 106392-12-5D, rhodamine 6G-doped
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(patterned block-copolymer-silica mesostructures as host ***media*** for ***laser*** dye rhodamine 6G)

IT 989-38-8, Rhodamine 6G
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(polymer contg.; patterned block-copolymer-silica mesostructures as host ***media*** for ***laser*** dye rhodamine 6G)

RE.CNT 61 THERE ARE 61 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L4 ANSWER 16 OF 95 CAPLUS
AN 2001:424347 CAPLUS
DN 135:160278
ED Entered STN: 13 Jun 2001
TI Crystallization of Ag-In-Sb-Te phase-change optical recording films
AU Chou, Lih-Hsin; Chang, Yem-Yeu; Chai, Yeong-Cherng; Wang, Shiunn-Yeong
CS Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, 300, Taiwan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (2001), 40(5A), 3375-3376
CODEN: JAPNDE; ISSN: 0021-4922

PB Japan Society of Applied Physics
DT Journal
LA English
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 73, 74
AB Cryst. phases formed on thermally annealed and laser-annealed Ag12.4In3.8Sb55.2Te28.6 four-element alloy films are different. After 1 h isothermal annealing at 190-450.degree., ***hexagonal*** Sb and chalcopyrite AgInTe2 phases were obsd., whereas laser annealing by initialization at laser power >2.86 mW/.mu.m2 yielded cubic cryst. Sb and AgSbTe2 phases. There was only one exothermic peak at 170.degree. detd. by DSC measurement. Only the ***hexagonal*** Sb phase was obsd. by x-ray diffraction of samples subjected to DSC measurement. These exptl. results suggest that the activation energy for crystn. derived from Kissinger's equation using DSC data may not be the same as that for crystn. during erasing of phase-change ***optical*** recording ***disks*** .
ST crystn silver indium antimony telluride optical recording film
IT Annealing
Crystallization
Crystallization kinetics
Laser annealing
Optical recording
(crystn. and activation energy for crystn. of Ag-In-Sb-Te phase-change optical recording films by isothermal annealing and laser annealing)
IT 149663-33-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(crystn. and activation energy for crystn. of Ag-In-Sb-Te phase-change optical recording films by isothermal annealing and laser annealing)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L4 ANSWER 17 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:302134 CAPLUS
DN 135:68439
ED Entered STN: 29 Apr 2001
TI Study of oxygen-doped GeSbTe film and its effect as an interface layer on the recording properties in the blue wavelength
AU Jeong, Tae Hee; Seo, Hun; Lee, Kwang Lyul; Choi, Sung Min; Kim, Sang Jun; Kim, Sang Youl
CS Devices and Materials Laboratory, LG Electronics Institute of Technology, Seoul, 137-724, S. Korea
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (2001), 40(3B), 1609-1612
CODEN: JAPNDE; ISSN: 0021-4922
PB Japan Society of Applied Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB An oxygen-doped GeSbTe interface layer improves the overwriting characteristics of the phase-change ***optical*** ***disk*** in the blue wavelength. The thermal and optical properties of oxygen-doped GeSbTe film and its crystal structure were investigated. Crystn. temp. and activation energy of the amorphous Ge-Sb-Te-O films are increased with the oxygen concn. while the m.p. is decreased. The refractive index of the cryst. state monotonically increases with the oxygen concn. of the film, while its extinction coeff. monotonically decreases. In terms of the cryst. structure, fcc characteristic peaks disappear gradually with oxygen concn., and above 35 at.% of oxygen, ***hexagonal*** peaks appear.

ST oxygen doped germanium antimony tellurium interface erasable
optical ***disk*** ; overwriting property ***optical***
disk oxygen doped interface layer
IT Films
(amorphous; crystn. temp. and activation energy of amorphous
oxygen-doped GeSbTe layer of phase-change ***optical***
disk)
IT Activation energy
Amorphization
Crystallization
Crystallization enthalpy
Melting point
(crystn. temp. and activation energy of amorphous oxygen-doped GeSbTe
layer of phase-change ***optical*** ***disk***)
IT Absorptivity
Erasable ***optical*** ***disks***
Refractive index
(oxygen-doped GeSbTe interface layer and its effect on overwriting
characteristics of phase-change ***optical*** ***disk*** in
blue wavelength)
IT Amorphous structure
(transitions; crystn. temp. and activation energy of amorphous
oxygen-doped GeSbTe layer of phase-change ***optical***
disk)
IT 1314-98-3, Zinc sulfide, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(oxygen-doped GeSbTe interface layer and its effect on overwriting
characteristics of phase-change ***optical*** ***disk*** in
blue wavelength)
IT 16150-49-5, Antimony germanium telluride(Sb2Ge2Te5)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(oxygen-doped GeSbTe interface layer and its effect on overwriting
characteristics of phase-change ***optical*** ***disk*** in
blue wavelength)
IT 7782-44-7, Oxygen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(oxygen-doped GeSbTe interface layer and its effect on overwriting
characteristics of phase-change ***optical*** ***disk*** in
blue wavelength)
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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P109
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L4 ANSWER 18 OF 95 CAPLUS
AN 2000:713711 CAPLUS
DN 133:274120
ED Entered STN: 11 Oct 2000
TI ***Optical*** data storage with phase change ***media*** .
Formation and characterization of GeSbTe layers
AU Friedrich, Ines
CS Inst. Grenzflachenforschung Vakuumphysik, Germany
SO Berichte des Forschungszentrums Juelich (2000), Juel-3775, i-vi, 1-164
CODEN: FJBEE5; ISSN: 0366-0885
DT Report
LA German
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 73, 75, 76
AB The aim of this thesis is to investigate and compare the material

properties of Ge2Sb2Te5 (PC1) and Ge4SbTe5 (PC2) with regard to the requirements of data storage application. The large change of the elec. resistance is used to investigate the phase change kinetics. Accompanying x-ray diffraction measurements show that PC1 undergoes a phase transitions from an amorphous to a cubic phase and a 2nd to a ***hexagonal*** phase. On the contrary, PC2 shows only 1 transition from amorphous to fcc. The cubic phase of both alloys agrees qual. to a NaCl-structure but for PC1 a high d. of vacancies is postulated. The optical contrast between the 2 cryst. phases of PC1 is small (4.5%) compared to that between the amorphous and the fcc. phase (66%). Nevertheless, selected area (electron) diffraction showed clearly the fcc. character of laser modified areas. Measurements on PC films with a thin ZnS-SiO2 layer on top show that the impact of the dielec. layer on the phase change properties of both alloys is not neglectable.

ST germanium antimony telluride optical recording photocrystn

IT Reflection spectra
Reflection spectra
(UV-visible; optical data storage with sputtered GeSbTe phase change ***media*** studied via structural, elec., and ***optical*** characterization)

IT Electric insulators
(coatings; ZnS-SiO2 protective layer effect on phase change of GeSbTe optical data storage materials)

IT Absorptivity
Crystallization
Crystallization kinetics
Dielectric function
Electric resistance
Microstructure
Optical recording
Optical recording materials
Physical process kinetics
Refractive index
Sputtering
Structural phase transition
(optical data storage with sputtered GeSbTe phase change ***media*** studied via structural, elec., and ***optical*** characterization)

IT UV and visible spectra
UV and visible spectra
(reflection; optical data storage with sputtered GeSbTe phase change ***media*** studied via structural, elec., and ***optical*** characterization)

IT Coating materials
(reflective; reflective layer of Al cosputtered with Ti or Cr for GeSbTe optical data storage materials)

IT 1314-98-3, Zinc sulfide, uses 7631-86-9, Silica, uses
RL: NUU (Other use, unclassified); USES (Uses)
(ZnS-SiO2 protective layer effect on phase change of GeSbTe optical data storage materials)

IT 16150-49-5, Antimony germanium telluride (Sb2Ge2Te5) 118651-49-3
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(optical data storage with sputtered GeSbTe phase change ***media*** studied via structural, elec., and ***optical*** characterization)

IT 11106-92-6 11145-71-4
RL: NUU (Other use, unclassified); USES (Uses)
(reflective layer of Al cosputtered with Ti or Cr for GeSbTe optical data storage materials)

RE.CNT 115 THERE ARE 115 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L4 ANSWER 19 OF 95 CAPLUS
AN 2000:713360 CAPLUS
ED Entered STN: 10 Oct 2000
TI Optical pickup and servo control system for digital data storage
IN Lazarev, Victor; Hang, Zhijiang; Miyazawa, Hiroshi
PA New Dimension Research & Instrument, Inc., USA; Kenwood Corporation
SO U.S., 42 pp., Cont.-in-part of Ser. No. US 1998-191022, filed on 12 Nov

1998
CODEN: USXXAM
DT Patent
LA English
IC ICM G11B007-00
INCL 369116000; 369054000; 369121000; 369044370
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6130873	A	20001010	US 1999-439880	19991112
	US 6208609	B1	20010327	US 1998-191022	19981112
PRAI	US 1998-191022	A2	19981112		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 6130873	ICM	G11B007-00
	INCL	369116000; 369054000; 369121000; 369044370
	IPCI	G11B0007-00 [ICM,7]
	NCL	369/116.000; 369/044.370; 369/053.280; 369/121.000
	ECLA	G11B007/12H; G11B007/13A; G11B007/135F; G11B007/14
US 6208609	IPCI	G11B0007-00 [ICM,7]
	NCL	369/112.260; 369/044.120; 369/116.000
	ECLA	G11B007/12H; G11B007/13A; G11B007/135F; G11B007/14

AB Methods and apparatus are provided for retrieving encoded information from data tracks on an ***optical*** ***disk*** using an array of microlasers as the illumination sources, an array of micro-scale photo detectors as the detection elements, and a bilens (BL) or a holographic optical element (HOE) as the main optical component. Multiple configurations are provided to position microlasers and photo detectors together on a mobile laser/detector block (LDB). The microlasers and detectors may be arranged in a ***hexagonal*** lattice relationship for an optimally compact arrangement. Laser beams generated by the surface-emitting microlasers are guided by the BL onto the ***optical*** ***disk*** (OD) surface. The reflected light is collected by the same BL or HOE, shifted, and then directed back onto the respective photo detectors on the LDB. Illumination, detection and alignment methods and apparatus for tracking, focusing, and magnification servo controls are also incorporated on the LDB.

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(1) Anon; JP 05330909 1995 CAPLUS
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(5) Wang; US 5894467 1999

L4 ANSWER 20 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:369163 CAPLUS
DN 133:97036
ED Entered STN: 04 Jun 2000
TI Crystal structure and microstructure of nitrogen-doped Ge2Sb2Te5 thin film
AU Jeong, Tae Hee; Kim, Myong R.; Seo, Hun; Park, Jeong Woo; Yeon, Cheong
CS Devices and Materials Lab., LG Corporate Institute of Technology, Seoul, 137-724, S. Korea
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (2000), 39(5A), 2775-2779
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
CC 75-7 (Crystallography and Liquid Crystals)
AB Ge2Sb2Te5 thin film is a promising candidate for recording material of phase-change ***optical*** ***disks*** , and N is doped into this film to increase overwrite characteristics. The crystal structure and the microstructure of N-doped Ge2Sb2Te5 thin film were studied. In the annealed N-doped thin film, the characteristic fcc. peaks on the x-ray diffraction pattern were broadened and shifted to a smaller angle with the increase of N content. A remarkably reduced grain size and a highly strained structure are seen in the TEM image. Doped N in Ge2Sb2Te5 thin film plays two roles. One is to distort the crystal lattice and induce a strain field in the film. The other is to refine the grain size of the film through pptn. The crystal lattice is transformed from fcc. to a

hexagonal structure in N content >20 at.%.
ST structure transition microstructure nitrogen doped antimony germanium telluride
IT Structural phase transition
(cubic- ***hexagonal*** ; effect of nitrogen content on cubic- ***hexagonal*** phase transition and microstructure of nitrogen-doped Ge2Sb2Te5 film)
IT Microstructure
(effect of nitrogen content on cubic- ***hexagonal*** phase transition and microstructure of nitrogen-doped Ge2Sb2Te5 film)
IT Amorphization
Enthalpy
(effect of nitrogen content on enthalpy of amorphization of nitrogen doped Ge2Sb2Te5 films)
IT Grain size
(in nitrogen doped Ge2Sb2Te5 films)
IT 7727-37-9, Nitrogen, processes 282117-52-6, Antimony germanium nitride telluride (Sb0.22Ge0.22N0.02Te0.54) 282117-53-7, Antimony germanium nitride telluride (Sb0.21Ge0.21N0.06Te0.52) 282117-54-8, Antimony germanium nitride telluride (Sb0.2Ge0.2N0.1Te0.5) 282117-55-9, Antimony germanium nitride telluride (Sb0.19Ge0.19N0.14Te0.48) 282117-56-0, Antimony germanium nitride telluride (Sb0.18Ge0.18N0.19Te0.45) 282117-57-1, Antimony germanium nitride telluride (Sb0.18Ge0.18N0.2Te0.45) 282117-58-2, Antimony germanium nitride telluride (Sb0.17Ge0.17N0.24Te0.42) 282117-59-3, Antimony germanium nitride telluride (Sb0.15Ge0.15N0.31Te0.38)
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(effect of nitrogen content on cubic- ***hexagonal*** phase transition and microstructure of nitrogen-doped Ge2Sb2Te5 film)
IT 16150-49-5, Antimony germanium telluride (Sb2Ge2Te5)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(effect of nitrogen content on cubic- ***hexagonal*** phase transition and microstructure of nitrogen-doped Ge2Sb2Te5 film)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L4 ANSWER 21 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:313976 CAPLUS
ED Entered STN: 15 May 2000
TI Optical lens and condensing lens, optical pickup device and optic recording recycling device. [Machine Translation].
IN Kijima, Koichiro; Yamamoto, Kenji; Ichimura, Isao; Osato, Kiyoshi
PA Sony Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G02B001-02
ICS G02B013-00; G11B007-135
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000131502	A2	20000512	JP 1998-303025	19981023
PRAI	JP 1998-303025		19981023		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2000131502	ICM	G02B001-02
	ICS	G02B013-00; G11B007-135
	IPCI	G02B0001-02 [ICM,7]; G02B0013-00 [ICS,7]; G11B0007-135 [ICS,7]

AB [Machine Translation of Descriptors]. As the optical lens which possesses high index of refraction is offered, the ideal condensing lens is offered to the near field record recycling method making use of this, the optical pickup device and the optic recording recycling device which correspond to high density large increasing capacity of the ***optical*** recording ***media*** are offered. The principal component of 1st optical lens 2 is designated as the Gan, or 1st optical lens 2 is formed with the Gan monocrystal which possesses the crystalline structure of cubic type, as or 1st optical lens 2 is formed with the Gan monocrystal which possesses the crystalline structure of the ***hexagonal*** system, in 2nd optical lens 3 the diameter of the luminous flux which the incoming radiation is done is made small, the Na of the condensing lens 4 which with 1st optical lens 2 and 2nd optical lens 3 is formed 1.5 or more and is made small size lightweight.

L4 ANSWER 22 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:308056 CAPLUS
DN 133:10659
ED Entered STN: 12 May 2000
TI Multiple Stokes and anti-Stokes generation in triclinic .gamma.-KIO3 and ***hexagonal*** .alpha.-LiIO3 nonlinear crystals
AU Kaminskii, A. A.; Eichler, H. J.; Hulliger, J.; Haussuhl, S.; Chyba, T.; Temple, D.; Barnes, J. C.; Dolbinina, V. N.; Findeisen, J.; Jiyang, Wang; Menkai, Lu
CS Institute of Crystallography, Russian Academy of Sciences, Moscow, 117333, Russia
SO Laser Physics (2000), 10(2), 627-632
CODEN: LAPHEJ; ISSN: 1054-660X
PB MAIK Nauka/Interperiodica Publishing
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Efficient stimulated Raman scattering (SRS) in triclinic .gamma.-KIO3 and ***hexagonal*** .alpha.-LiIO3 crystals was obsd. under picosecond laser excitation. All scattering components were identified and connected with the SRS-active vibration modes of these iodates. The authors classify the .gamma.-KIO3 and .alpha.-LiIO3 acentric compds. as promising (.chi.(2) + .chi.(3)) ***media*** for Raman ***laser*** shifters.
ST stimulated Raman lithium potassium iodate nonlinear crystal
IT Molecular vibration
Second-order nonlinear optical properties
Third-order nonlinear optical properties
(multiple Stokes and anti-Stokes generation in triclinic .gamma.-KIO3 and ***hexagonal*** .alpha.-LiIO3 nonlinear crystals)
IT Raman spectra
(stimulated; multiple Stokes and anti-Stokes generation in triclinic .gamma.-KIO3 and ***hexagonal*** .alpha.-LiIO3 nonlinear crystals)
IT 7758-05-6 13765-03-2, Lithium iodate (LiIO3)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(multiple Stokes and anti-Stokes generation in triclinic .gamma.-KIO3 and ***hexagonal*** .alpha.-LiIO3 nonlinear crystals)
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L4 ANSWER 23 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1999:444070 CAPLUS
DN 131:220452
ED Entered STN: 20 Jul 1999
TI Magneto-optical properties of chromium-alloyed manganese bismuth thin films
AU Bandaru, Prabhakar R.; Sands, Timothy D.; Weller, Dieter; Marinero, Ernesto E.
CS Department of Materials Science and Mineral Engineering, University of California, Berkeley, CA, 94720, USA
SO Journal of Applied Physics (1999), 86(3), 1596-1603
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 66, 74, 77
AB MnBi films were considered for short-wavelength rewritable ***optical*** recording ***media*** due to the large magnetooptic Kerr rotation and perpendicular anisotropy (Ku) of the ***hexagonal*** magnetic low-temp. MnBi phase. Coincident structural and magnetic transformations near the Curie temp. (360.degree.) result in poor thermal cycling behavior, preventing the application of MnBi as rewritable media. The authors have previously hypothesized that the substitution of Cr for Mn would reduce the ferromagnetic coupling along the c axis, thereby lowering the Curie temp. and possibly decoupling the magnetic and structural transitions. Preliminary exptl. data reported earlier (B. et al., 1998) supported this hypothesis. The effects of Cr substitution are further explored and the feasibility of Mn1-xCrxBi (0<x<0.15) films for magnetooptical recording applications analyzed. 5% Cr is sufficient for decoupling the phase transitions with no significant loss in the magnetooptic figure of merit. TEM studies indicate a small grain size (.apprx.50 nm) for the Cr-alloyed films, which could be beneficial for reducing media noise.
ST magnetooptical bismuth chromium manganese film
IT Curie temperature (ferromagnetic)
Ferromagnetic exchange
Kerr effect (magnetooptical)
Magnetic hysteresis
Magnetooptical recording materials
Transmission electron microscopy
X-ray diffraction
(magnetooptical properties of chromium manganese bismuth films)
IT 119675-64-8, Bismuth 50, manganese 50 (atomic) 242805-67-0 242805-68-1 242805-69-2 242805-70-5 242805-71-6
RL: PRP (Properties)
(of chromium manganese bismuth films)
RE.CNT 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L4 ANSWER 24 OF 95 CAPLUS
AN 1999:324544 CAPLUS
DN 131:65471
ED Entered STN: 27 May 1999
TI Photonic bandgap ***disk*** ***laser***
AU Lee, R. K.; Painter, O. J.; Kitzke, B.; Scherer, A.; Yariv, A.
CS Applied Physics and Electrical Engineering, California Institute of Technology, Pasadena, CA, 91125, USA
SO Electronics Letters (1999), 35(7), 569-570
CODEN: ELLEAK; ISSN: 0013-5194
PB Institution of Electrical Engineers
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A two-dimensional photonic crystal defined ***hexagonal*** ***disk*** ***laser*** which relies on Bragg reflection rather than the total internal reflection as in traditional microdisk lasers is described. The devices are fabricated using a selective etch to form free standing membranes suspended in air. Room temp. lasing at 1650 nm for a 150 nm thick, .apprx.15.mu.m wide cavity fabricated in InP/InGaAsP is demonstrated with pulsed optical pumping.
ST photonic bandgap ***disk*** ***laser*** cavity pumping; gallium indium arsenide phosphide laser
IT ***Optical*** reflection
(Bragg; photonic bandgap ***disk*** ***laser*** with Bragg reflection)
IT ***Lasers***
Optical pumping
Photonic crystals
(photonic bandgap ***disk*** ***laser*** with Bragg reflection)
IT 12063-98-8, Gallium phosphide, uses
RL: DEV (Device component use); USES (Uses)
(photonic bandgap ***disk*** ***laser*** with Bragg reflection)
IT 12645-36-2, Gallium indium arsenide phosphide
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(photonic bandgap ***disk*** ***laser*** with Bragg reflection)
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L4 ANSWER 25 OF 95 CAPLUS
AN 1999:160693 CAPLUS
DN 130:275389
ED Entered STN: 11 Mar 1999
TI Magnetization distribution in magneto- ***optical*** ***medium*** on patterned substrate

AU   Safonov, Vladimir L.; Suzuki, Takao
CS   Information Storage Materials Laboratory, Toyota Technological Institute, Tenpaku-ku, Nagoya, 468, Japan
SO   Journal of Magnetism and Magnetic Materials (1999), 192(3), 523-528
     CODEN: JMMMDC; ISSN: 0304-8853
PB   Elsevier Science B.V.
DT   Journal
LA   English
CC   77-1 (Magnetic Phenomena)
AB   A micromagnetic calcn. of magnetization in a ferromagnetic thin film with a perpendicular magnetic anisotropy fabricated on a patterned substrate is carried out. The domain wall energy of pinning of domain walls between up and down magnetized domains is detd. by geometry of substrate. Estns. of regions of stability of two different domain structures in the ***hexagonal*** lattice of circle patches are given.
ST   magnetization distribution magnetooptical medium; ferromagnetic film anisotropy micromagnetic calcn
IT   Ferromagnetic materials
     Magnetic anisotropy
     Magnetic domain walls
     Magnetization
        (magnetization distribution in magneto- ***optical*** ***medium*** on patterned substrate)
IT   Magnetism
        (micromagnetism; magnetization distribution in magneto- ***optical*** ***medium*** on patterned substrate)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Andra, W; Phys Stat Sol A 1991, V125, P9
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L4   ANSWER 26 OF 95 CAPLUS
AN   1999:77413 CAPLUS
DN   130:160336
ED   Entered STN: 05 Feb 1999
TI   ***Laser*** device elements, manufacture, and ***optical*** ***disk*** apparatus
IN   Yokokawa, Shunya; Saito, Toru
PA   Matsushita Electric Industrial Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 7 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM H01S003-18
     ICS G11B007-125; H01L033-00
CC   73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
     Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11026877	A2	19990129	JP 1997-176742	19970702
	JP 3456118	B2	20031014		
	JP 2003101153	A2	20030404	JP 2002-232402	19970702
PRAI	JP 1997-176742	A3	19970702		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 11026877	ICM	H01S003-18
	ICS	G11B007-125; H01L033-00
	IPCI	H01S0003-18 [ICM,6]; G11B0007-125 [ICS,6]; H01L0033-00 [ICS,6]
JP 2003101153	IPCI	H01S0005-323 [ICM,7]; H01L0031-0248 [ICS,7]

AB   The manufg. process comprises the steps of: bonding (1) a ***hexagonal*** GaN-type laser laminate and (2) a cubic GaAs-type

substrate; and forming a laser facet in (1) by cleaving (2) and thereby cleaving (1), where (1) uses GaN, AlGaN and/or GaInN; (2) uses Si, Ge, GaAs. GaP and/or InP; and a laminate contg. a ZnO and/or a MgO layer may be formed between (1) and (2).
ST silicon aluminum gallium indium nitride ***hexagonal*** cubic laser
IT ***Optical*** ***disks***
Semiconductor lasers
(***laser*** device elements, manuf., and ***optical*** ***disk*** app.)
IT 1303-00-0, Gallium arsenide (GaAs), uses 1309-48-4, Magnesium oxide (MgO), uses 1314-13-2, Zinc oxide (ZnO), uses 7440-21-3, Silicon, uses 7440-56-4, Germanium, uses 12063-98-8, Gallium phosphide (GaP), uses 22398-80-7, Indium phosphide (InP), uses 25617-97-4, Gallium nitride (GaN) 106097-44-3, Aluminum gallium nitride (AlGaN) 120994-23-2, Gallium indium nitride (GaInN)
RL: DEV (Device component use); USES (Uses)
(***laser*** device elements, manuf., and ***optical*** ***disk*** app.)

L4 ANSWER 27 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:456616 CAPLUS
DN 129:283006
ED Entered STN: 23 Jul 1998
TI Linear and nonlinear optical response of metal colloid heterostructures by molecular self-assembly on optical chemical benches
AU Andrews, Mark P.; Tuling, Russell; Vargas-Baca, Ignacio; Vali, H.; Kuzyk, Mark G.
CS Department of Chemistry, McGill University, Montreal, QC, Can.
SO Proceedings of SPIE-The International Society for Optical Engineering (1998), 3282(Photosensitive Optical Materials and Devices II), 39-49
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB An optical chem. bench is a nanostructured integrated optics structure - usually a waveguide circuit - where chem. and spectroscopy can be combined for the purpose of studying chem. reactivity in thin films and at interfaces. The authors describe how glass waveguide surfaces can be decorated with Rayleigh-limit (sub-20 nm diam.) Ag and Au colloid particles by covalent bonding to an organothiolate adhesion layer attached to the glass. The step-by-step assembly of the heterostructure was monitored by XPS. XPS, TEM and linear extinction confirm selective attachment of Au to Ag. The extinction spectrum of the dipolar surface plasmon mode of mutually bound Ag and Au colloid species is perturbed by mutual polarization of the particles. There is little perturbation of the extinction spectrum when the particles are deposited in the same plane, but not chem. linked to one another. Fractal aggregates of particles are of unique interest for enhancing nonlinear optical field responses. Over long time scales, Ag particles can be grown in a two-dimensional polycrystal having ***hexagonal*** symmetry. At shorter times, the surface population of particles scales as a fractal. The fractal state probably represents the transitional regime appropriate to diffusion limited aggregation in the early stages of colloid deposition. The Ag particles occupy a fractal dimension of .apprx.1.4, whereas the Au particles attached to Ag occupy a dimension of 1.75. The overall structure is the 1st step in the fabrication of artificial three-dimensional crystals of colloidal metals joined by mol. scale chem. bonds. MSA is also used to prep. assemblies of self-poled stilbazolium chromophores by acid-base reaction of the pyridyl unit with thioacetic acid grafted to the OCB metal particle surface. The linear extinction spectrum appears to reflect a strong coupling of the optical response of the chromophore with the surface confined dipolar plasma excitation of the conduction electrons of the Ag particles. Probably surface plasmons might should be used to amplify the optical field in the vicinity of dye mols. for enhanced harmonic generation. Second harmonic (532 nm) light was detected from the heterostructure. The 2nd order susceptibility for the heterostructure is 1.48 .times. 10-22 C3/J2 (4.0 .times. 10-8 esu). This value is a factor of 7 larger than the optimized .chi.(2) of an analogous corona poled sample of neutral stilbazole mols. hosted in higher no. d. in a poly(styrene) film. The nonlinear optical response of the

chromophore-metal nanoparticle heterostructure can originate from several sources, including surface plasmon- ***mediated*** ***optical*** field effects.

ST linear nonlinear optical property metal colloid; silver gold colloid heterostructure mol assembly

IT Aggregates
Colloids
Fractals
Glass substrates
Methylation
Nonlinear optical properties
Optical absorption
Optical waveguides
Particles
Surface plasmon
Surface structure
UV and visible spectra
X-ray photoelectron spectra
(linear and nonlinear optical response of metal colloid heterostructures by mol. self-assembly on optical chem. benches)

IT 113443-18-8, Silicon monoxide
RL: NUU (Other use, unclassified); USES (Uses)
(grid; linear and nonlinear optical response of metal colloid heterostructures by mol. self-assembly on optical chem. benches)

IT 121-44-8, Triethylamine, uses
RL: CAT (Catalyst use); USES (Uses)
(linear and nonlinear optical response of metal colloid heterostructures by mol. self-assembly on optical chem. benches)

IT 7440-21-3, Silicon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(linear and nonlinear optical response of metal colloid heterostructures by mol. self-assembly on optical chem. benches)

IT 9003-53-6, Polystyrene
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(linear and nonlinear optical response of metal colloid heterostructures by mol. self-assembly on optical chem. benches)

IT 68-11-1, Mercaptoacetic acid, processes 77-78-1, Dimethylsulfate 105-09-9, 1,4-Benzenedimethanethiol 4420-74-0 7761-88-8, Silver nitrate, processes 16903-35-8, Tetrachloroauric acid 137758-92-0, ODMASP
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(linear and nonlinear optical response of metal colloid heterostructures by mol. self-assembly on optical chem. benches)

IT 7440-22-4P, Silver, properties 7440-57-5P, Gold, properties
RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); PROC (Process)
(linear and nonlinear optical response of metal colloid heterostructures by mol. self-assembly on optical chem. benches)

L4 ANSWER 28 OF 95 CAPLUS

AN 1997:674911 CAPLUS
DN 127:325276
ED Entered STN: 24 Oct 1997

TI High-resolution analytical electron microscopy of boron nitrides laser-heated at high pressure

AU Golberg, Dmitri; Bando, Yoshio; Eremets, Mikhail; Kurashima, Keiji; Tamiya, Takashi; Takemura, Kenichi; Yusa, Hitoshi
CS National Institute for Research in Inorganic Materials, Tsukuba, 305, Japan

SO Journal of Electron Microscopy (1997), 46(4), 281-292
CODEN: JELJA7; ISSN: 0022-0744
PB Oxford University Press
DT Journal
LA English
CC 76-13 (Electric Phenomena)

AB High-resoln. TEM microscopy and electron energy loss spectroscopy have been carried out for cubic and ***hexagonal*** boron nitrides (BN) ***laser*** heated in argon or nitrogen ***media*** at pressures of 5-11 GPa in a diamond anvil cell. In particular, recrystd. products of irradn. from a fluid phase in the form of tiny flakes have been investigated. The observations revealed perfect crystallinity (either of cubic or ***hexagonal*** BN) in flakes recrystd. from the fluid and

traces of melting in the bulk. Multishelled circular and polygonal BN nanotubes, which did not contain any addnl. inclusions, were found after laser heating of cubic and ***hexagonal*** BN in nitrogen. The nanotubes typically exhibited 3-10 shells, a characteristic inner dimension in cross-section of 2-6 nm, and stoichiometry of B/N .apprx. 1. They were found to have grown either from a cubic BN matrix or from a mixt. of amorphous + turbostratic + ***hexagonal*** BN, which had recrystd. on the specimens' surface from the fluid phase.

ST boron nitride laser heating pressure TEM; nanotube boron nitride

IT Nanotubes
(from boron nitride)

IT Laser heating
Transmission electron microscopy
(high-resoln. anal. electron microscopy of boron nitrides laser-heated at high pressure)

IT 10043-11-5, Boron mononitride, properties
RL: PRP (Properties)
(high-resoln. anal. electron microscopy of boron nitrides laser-heated at high pressure)

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(3) Bando, Y; Microbeam Anal 1994, V3, P279 CAPLUS
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(33) Weng-Sieh, Z; Phys Rev B 1995, V51, P11229 CAPLUS

L4 ANSWER 29 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:246167 CAPLUS
DN 126:336008
ED Entered STN: 16 Apr 1997
TI Infrared ellipsometry on ***hexagonal*** and cubic boron nitride thin films
AU Franke, E.; Neumann, H.; Schubert, M.; Tiwald, T. E.; Woollam, J. A.; Hahn, J.
CS Institute of Surface Modification, Leipzig, D-04303, Germany
SO Applied Physics Letters (1997), 70(13), 1668-1670
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English

CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB IR spectroscopic ellipsometry (IRSE) over 700-3000 cm-1 was used to study and distinguish the microstructure of polycryst. ***hexagonal*** and cubic BN films deposited by magnetron sputtering onto (100) Si. The IRSE data are sensitive to the thin-film layer structure, phase compn., and av. grain c-axes orientations of the ***hexagonal*** phase. The amt. of cubic material in high cubic BN content films was detd. from the IR ***optical*** dielec. function using an effective ***medium*** approach.
ST IR ellipsometry ***hexagonal*** cubic boron nitride
IT Sputtering
(IR ellipsometry of ***hexagonal*** and cubic boron nitride films deposited by)
IT Dielectric constant
Ellipsometry
(IR; of boron nitride ***hexagonal*** and cubic films)
IT Microstructure
(of boron nitride ***hexagonal*** and cubic films)
IT 7440-21-3, Silicon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(IR ellipsometry of ***hexagonal*** and cubic boron nitride films on)
IT 10043-11-5, Boron nitride, properties
RL: PRP (Properties)
(IR ellipsometry of ***hexagonal*** and cubic films of)

L4 ANSWER 30 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:637726 CAPLUS
DN 125:312045
ED Entered STN: 30 Oct 1996
TI Multiple core fiber laser and optical amplifier
IN Scifres, Donald R.
PA SDL, Inc., USA
SO U.S., 11 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01S003-30
INCL 372006000
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5566196	A	19961015	US 1994-330262	19941027
PRAI	US 1994-330262		19941027		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 5566196	ICM	H01S003-30
	INCL	372006000
	IPCI	H01S0003-30 [ICM,6]
	NCL	372/006.000; 372/068.000
	ECLA	G02B006/02C; H01S003/067C

AB Fiber lasers or amplifiers are described in which the ***optical*** fiber gain ***medium*** has two or more nonconcentric core regions, each of which is capable of gain or lasing when optically pumped. The fiber may be single clad or double clad, with multiple core regions embedded within a common cladding region or within sep. cladding regions. The core regions may be arranged in a linear, closely spaced ***hexagonal*** , or rectangular matrix or some other configuration and positioned sym. or noncentrosym., centered or off-center within the core region or regions. The spacing between neighboring core regions may be far enough apart to minimize optical interaction between cores for independent light amplifying or laser action or be close enough for phase-locked operation of the multiple cores to occur. The cores may be doped with the same or different active ionic species, of which one or more could be upconverting ions. If several dopants are present, the multiple pump wavelengths could be provided simultaneously or one could be selected for simultaneous multiple wavelength amplification or lasing or selected single wavelength amplification or lasing. The multicore output

can be imaged by a lens or collimated by a lens array then focused to a spot.
ST fiber laser multiple core; fiber amplifier multiple core
IT Optical instruments
(amplifiers; multiple core fiber lasers and optical amplifiers)
IT Optical fibers
(amplifying; multiple core fiber lasers and optical amplifiers)
IT Lasers
(fiber; multiple core fiber lasers and optical amplifiers)
IT 7440-52-0, Erbium, uses
RL: DEV (Device component use); USES (Uses)
(multiple core fiber lasers and optical amplifiers)

L4 ANSWER 31 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:403760 CAPLUS
DN 125:180494
ED Entered STN: 12 Jul 1996
TI ***Hexagonal*** ***optical*** patterns in anisotropic non-linear ***media***
AU Mamaev, A. V.; Saffman, M.
CS Dep. Optics Fluid Dynamics, Rioe National Lab., Roskilde, DK-4000, Den.
SO Europhysics Letters (1996), 34(9), 669-674
CODEN: EULEEJ; ISSN: 0295-5075
PB Editions de Physique
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Exptl. observations are presented of ***hexagonal*** patterns in strongly anisotropic nonlinear ***optical*** ***media*** . Close to threshold rolls are obsd. As the nonlinearity is increased a transition from rolls to hexagons, leading finally to a pure ***hexagonal*** state, is obsd. A mean-field model, in agreement with expts., shows that the anisotropy locks the far-field orientation of the hexagons, while leaving their rotational symmetry undisturbed.
ST ***optical*** ***hexagonal*** pattern anisotropic nonlinear ***medium***
IT Optical nonlinear property
(***hexagonal*** ***optical*** patterns in anisotropic ***media*** having)
IT Optical anisotropy
(***hexagonal*** ***optical*** patterns in nonlinear ***media*** having)
IT 7440-45-1, Cerium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(***hexagonal*** optical patterns in anisotropic nonlinear photorefractive crystal of barium strontium niobate doped with)
IT 107251-85-4, SBN:60
RL: PRP (Properties)
(***hexagonal*** optical patterns in anisotropic nonlinear photorefractive crystal of cerium-doped)

L4 ANSWER 32 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:749479 CAPLUS
DN 123:271116
ED Entered STN: 22 Aug 1995
TI The structure and crystallization characteristics of phase change ***optical*** ***disk*** material GeSb2Te4
AU Mao, Z. L.; Chen, H.; Jung, Ai-lien
CS Amorphous Res. Lab., Beijing Univ. Aeronautics Astronautics, Beijing, 100083, Peop. Rep. China
SO Journal of Applied Physics (1995), 78(4), 2338-42
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 73
AB The crystn. characteristics of amorphous GeSb2Te4 thin films were studied by time-resolved transition measurements. A metastable phase appeared at the 1st stage of the crystn. process and then the metastable phase was transformed into a stable cryst. phase at higher annealing temps. The

x-ray diffraction and TEM results indicated the metastable phase was identified as a fcc. structure and the stable cryst. phase corresponded to a ***hexagonal*** structure. The authors' exptl. results show that the Ge1Sb2Te4 materials are applicable for phase change erasable optical storage.
ST structure crystn antimony germanium telluride
IT Crystallization
Crystallization kinetics
(structure and crystn. characteristics of phase change ***optical*** ***disk*** material)
IT Memory devices
(***optical*** ***disks*** , structure and crystn. characteristics of phase change ***optical*** ***disk*** material)
IT 16150-59-7, Antimony germanium telluride (Sb2GeTe4)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(structure and crystn. characteristics of phase change ***optical*** ***disk*** material)

L4 ANSWER 33 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:431146 CAPLUS
DN 123:127976
ED Entered STN: 22 Mar 1995
TI Low temperature crystal growth of MnBi films
AU Nakada, Masafumi; Okada, Mitsuya
CS Functional Devices Res. Labs., NEC Corp., Kawasaki, 216, Japan
SO IEEE Transactions on Magnetics (1994), 30(6, Pt. 1), 4431-3
CODEN: IEMGAQ; ISSN: 0018-9464
DT Journal
LA English
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 77
AB The relation between deposition conditions of Bi and Mn layers and crystal growth of MnBi were studied to reduce the MnBi annealing temp. for its application to a magneto- ***optical*** ***disk*** . Higher c-axis orientation of the ***hexagonal*** Bi layer and lower Mn oxide concn. in the Mn layer reduces the annealing temp. Growth of MnBi <150.degree., which is much lower than the decompn. temp. of photo-polymer (.apprx.200.degree.), was achieved by optimizing deposition conditions of Bi and Mn layers.
ST growth manganese bismuth crystal film mechanism; magnetism manganese bismuth crystal film disk
IT Crystal growth
(of bismuth-manganese films by annealing of bismuth/manganese layers)
IT Annealing
(of bismuth-manganese films in crystal growth)
IT ***Optical*** instruments
(magnetooptical, ***disks*** ; bismuth-manganese cryst. films for use in)
IT 12010-50-3
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(low temp. crystal growth and magnetic properties of films of)

L4 ANSWER 34 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:279412 CAPLUS
DN 122:121524
ED Entered STN: 07 Jan 1995
TI ***Disk*** noise of quadrilayer MnBi magneto- ***optical*** ***disks***
AU Nakada, Masafumi; Okada, Mitsuya
CS Funct. Devices Res. Lab., NEC Corp., Kawasaki, 216, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1994), 33(12A), 6577-81
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
CC 77-8 (Magnetic Phenomena)
AB ***Disk*** noise of quadrilayer MnBi magneto- ***optical*** ***disks*** with grooved glass substrates with studied. Both

reflectivity noise and polarization noise of MnBi disks were 20 dB higher than those of TbFeCo disks. The degree of c-axis orientation of a ***hexagonal*** MnBi layer, which is inversely proportional to fluctuation in the magnetization direction, and Mn oxide in a MnBi layer, which is inversely proportional to fluctuation in the magnetization direction, and Mn oxide in a MnBi layer are not dominant origins of the high disk noise. Bi layers 20 nm in thickness on grooved substrates have many hillocks over 50 nm in height at land edges. Noise redn. of 10 dB can be achieved by using a flat glass substrate. Surface roughness on the Bi layers is one of the main causes of high disk noise of MnBi disks.

ST manganese bismuth magnetooptical recording disk

IT Electric noise
Magnetic induction and Magnetization
(***disk*** noise of quadrilayer MnBi magneto- ***optical*** ***disks***)

IT Recording apparatus
(magnetooptical disks, ***disk*** noise of quadrilayer MnBi magneto- ***optical*** ***disks***)

IT Surface structure
(roughness, ***disk*** noise of quadrilayer MnBi magneto- ***optical*** ***disks***)

IT 12010-50-3
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(***disk*** noise of quadrilayer MnBi magneto- ***optical*** ***disks***)

AN 1993:636700 CAPLUS
DN 119:236700
ED Entered STN: 27 Nov 1993

TI Transfer of polarized infrared radiation in optically anisotropic media: application to horizontally oriented ice crystals

AU Takano, Y.; Liou, K. N.
CS Cent. Atmos. Remote Sounding Stud., Univ. Utah, Salt Lake City, UT, 84112, USA

SO Journal of the Optical Society of America A: Optics, Image Science, and Vision (1993), 10(6), 1243-56
CODEN: JOAOD6; ISSN: 0740-3232
DT Journal
LA English

CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB The authors have developed a theory for the computation of the polarization of IR radiation in optically anisotropic media, with specific application to horizontally oriented ice crystals that frequency occur in cirrus clouds. Both emission and scattering contributions are accounted for in the basic formulation concerning the transfer of thermal radiation in anisotropic media. The symmetry relations of the phase matrix elements for horizontally oriented ice crystals, which are required in the IR polarization formulations, are presented for the 1st time to the knowledge. Phase matrix elements for horizontally oriented ***hexagonal*** ice crystals are computed by a geometric ray-tracing technique. Radiance and linear-polarization patterns at a 10-.mu.m wavelength that are emergent from cirrus clouds that contain plates and columns oriented in 2-dimensional space are presented and discussed in phys. terms. Downward polarization emergent from the cloud base is neg., while upward polarization emergent from the cloud top has a pos. max. value near the limb directions. These polarization configurations differ distinctly from the configurations of polarization emergent from ice clouds that contain randomly oriented ice crystals in 3-dimensional space. Given these results, it appears feasible to infer the orientation characteristics of ice crystals in cirrus clouds using IR polarization measurements either above or below the cloud.

ST IR radiation transfer ***optical*** anisotropic ***media*** ; ice crystal IR transfer

IT Clouds
(IR radiation transfer in ice crystals in)

IT Energy transfer
(IR, in horizontally oriented ice crystals)

IT Infrared radiation
(polarized, transfer of, in horizontally oriented ice crystals)

IT 7732-18-5, Water, ice
RL: PRP (Properties)
(IR radiation transfer in horizontally oriented crystals of)

L4 ANSWER 36 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1991:460216 CAPLUS
DN 115:60216
ED Entered STN: 10 Aug 1991
TI Spontaneous hexagon formation in a nonlinear ***optical*** ***medium*** with feedback mirror
AU D'Alessandro, G.; Firth, W. J.
CS Dep. Phys. Appl. Phys., Univ. Strathclyde, Glasgow, G4 0NG, UK
SO Physical Review Letters (1991), 66(20), 2597-600
CODEN: PRLTAO; ISSN: 0031-9007
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Two-dimensional numerical simulations of a nonlinear optical system made of a thin slice of Kerr material and a feedback mirror are presented. The phase modulation induced on the light by the nonlinear material is transformed into amplitude modulation by propagation to the mirror and back, thus forming a feedback loop. The simulation show that the uniform plane-wave soln. deforms for sufficient pump intensity into a nonuniform pattern of ***hexagonal*** symmetry, independently of the sign of the nonlinearity, a feature which may be generic for third-order nonlinear optical systems.
ST modulation mirror nonlinear Kerr system; hexagon formation light nonlinear Kerr system
IT Electric birefringence
(hexagon formation by light modulation using mirror and thin Kerr medium exhibiting)
IT Optical nonlinear property
(hexagon formation, by light modulation, using thin Kerr medium and mirror)

L4 ANSWER 37 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:601812 CAPLUS
DN 113:201812
ED Entered STN: 23 Nov 1990
TI TEM characterization of structural changes in graphite plates due to pulsed carbon dioxide laser irradiation
AU Breval, E.; Alam, M.; Debroy, T.; Roy, R.
CS Pennsylvania State Univ., University Park, PA, 16802, USA
SO Journal of Materials Science Letters (1990), 9(9), 1071-4
CODEN: JMSLD5; ISSN: 0261-8028
DT Journal
LA English
CC 75-7 (Crystallography and Liquid Crystals)
AB Graphite ***disks*** were irradiated by a CO2 ***laser*** beam and examd. by TEM. Bright field images are interpreted as epitaxial growth of lonsdaleite (the high pressure C polymorph with ***hexagonal*** structure) with graphite. Convergent beam electron diffraction patterns show 100 and 101 reflections of lonsdaleite very clearly.
ST graphite phase transition lonsdaleite laser irradn; lonsdaleite formation graphite laser irradn; carbon lonsdaleite type graphite laser irradn
IT Laser radiation, chemical and physical effects
(phase transition in graphite irradiated by, TEM study of)
IT 7782-42-5, Graphite, properties
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(phase transition in, under pulse laser irradn., TEM study of)
IT 7440-44-0, Carbon, properties
RL: PRP (Properties)
(phase transition of graphite to londaleite-type, under laser irradn.)

L4 ANSWER 38 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:505044 CAPLUS
DN 111:105044
ED Entered STN: 16 Sep 1989
TI Neutral hydrogen in the M96 group: the galaxies and the intergalactic ring
AU Schneider, Stephen E.

CS Five Coll. Astron., Univ. Massachusetts, Amherst, MA, USA
SO Astrophysical Journal (1989), 343(1, Pt. 1), 94-106
CODEN: ASJOAB; ISSN: 0004-637X
DT Journal
LA English
CC 73-9 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The M96 group was examd. at 21 cm to study the galaxies' neutral H content and to search for evidence of interactions that might help explain the origin of the large intergalactic H I feature found there. M96, an Sab spiral, has 90% of its H I concd. outside of the central bright ***optical*** ***disk*** possibly captured intergalactic gas. The ringlike distribution of the intergalactic gas may, in turn, be shaped by interactions with M96. An extremely faint (B .apprx. -10 or -11) dwarf irregular galaxy was also found. Questions about the distance and membership of the M96 group are addressed, and it is shown that many previous group catalogs must be in error. A mass-to-light ratio of <30 was found for the M96 group; a no. of previous ests. are inflated by inclusion of background galaxies a problem that may be widespread in group studies. A ***hexagonal*** (or honeycomb) observing grid yields more optimized spatial frequency coverage than a rectangular grid.
ST hydrogen abundance microwave galaxy M96
IT Galaxies
(M96 group, neutral hydrogen content and intergalactic ring in)
IT 12385-13-6, Atomic hydrogen, occurrence
RL: OCCU (Occurrence)
(abundance of, in M96 group of galaxies)

L4 ANSWER 39 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1988:571114 CAPLUS
DN 109:171114
ED Entered STN: 12 Nov 1988
TI A substrate for an optical element
IN Wada, Akihiro; Kakuta, Rinichi
PA Asahi Chemical Industry Co., Ltd., Japan
SO Eur. Pat. Appl., 19 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM C08F008-48
ICS G02B001-00; G11B007-24
CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 74
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 273397	A2	19880706	EP 1987-119155	19871223
	EP 273397	A3	19890301		
	EP 273397	B1	19920722		
	R: DE, FR, GB, IT				
	CA 1324699	A1	19931123	CA 1987-555303	19871223
	JP 63264613	A2	19881101	JP 1987-328084	19871224
	US 5198305	A	19930330	US 1991-814229	19911223
PRAI	JP 1986-308041	A	19861225		
	US 1987-136917	B1	19871222		
	US 1990-481694	B1	19900220		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 273397	ICM	C08F008-48
	ICS	G02B001-00; G11B007-24
	IPCI	C08F0008-48 [ICM,4]; G02B0001-00 [ICS,4]; G11B0007-24 [ICS,4]
CA 1324699	IPCI	C08F0220-18 [ICM,5]; G02B0001-04 [ICS,5]
JP 63264613	IPCI	C08F0220-14 [ICM,4]; C08F0220-04 [ICS,4]; C08F0220-08 [ICS,4]; C08F0220-14 [ICS,4]; C08F0222-08 [ICS,4]; G02B0001-04 [ICS,4]
US 5198305	IPCI	B32B0015-08 [ICM,5]; C08F0020-10 [ICS,5]
	IPCR	C08F0008-00 [I,C]; C08F0008-48 [I,A]
	NCL	428/463.000; 525/329.700; 526/318.450; 526/937.000; 528/481.000

AB The title substrates, which comprise polymers prepd. from Me methacrylate

(I), arom. vinyl monomers, and unsatd. aliph. acids and which are cyclized to form polymers contg. ***hexagonal*** acid anhydrides, have good heat resistance, and low birefringence and warping. A mixt. of styrene 18, methacrylic acid 11, I 71, MEK 10, and tert-dodecylmercaptan 0.1% contg. 600 ppm n-octadecyl-3-(4'-hydroxy-3',5'-di-tert-butylphenyl)propionate was radical polymd. at 126.degree., then stripped of monomers and cyclized under high temp./vacuum to give a polymer contg. styrene 20, I 65, methacrylic acid 4, and anhydride repeating units 11%. The above polymer was fabricated into an ***optical*** ***disk*** with birefringence <100 nm and warpage <0.4 mm.

ST unsatd acid copolymer cyclization; anhydride ***hexagonal*** polymer ***optical*** ***disk***

IT Lenses
Mirrors
(acrylate-vinyl arom. compd. polymers contg. ***hexagonal*** and hydride rings for)

IT Ring closure and formation
(of Me methacrylate-vinyl arom. compd.-unsatd. acid copolymers, for optical substrates)

IT Recording apparatus
(***optical*** ***disks*** , acrylate-vinyl arom. compd. polymers contg. ***hexagonal*** and hydride rings for)

IT 25035-81-8DP, Methacrylic acid-methyl methacrylate-styrene copolymer, cyclized 25767-39-9DP, Acrylic acid-methyl methacrylate-styrene copolymer, cyclized 95097-03-3DP, Methacrylic acid-methyl methacrylate-.alpha.-methylstyrene-styrene copolymer, cyclized 117157-93-4DP, cyclized
RL: PREP (Preparation)
(prepn. of, as substrates for optical elements)

L4 ANSWER 40 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:506453 CAPLUS
DN 107:106453
ED Entered STN: 19 Sep 1987
TI ***Laser*** heat-mode recording ***medium***
IN Nakatani, Yoshihiko; Okinaka, Hideyuki; Nakanishi, Norihiko; Shigematsu, Toshihiko
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G11B007-24
ICS B41M005-26
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 62084444	A2	19870417	JP 1985-225121	19851009
PRAI	JP 1985-225121		19851009		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 62084444	ICM	G11B007-24
	ICS	B41M005-26
	IPCI	G11B0007-24 [ICM,4]; B41M0005-26 [ICS,4]

AB The recording medium is composed of an alloy whose light reflectivity changes by the heat of a laser beam. A quartz substrate may be coated with a Co-Pd alloy film to give the recording medium. During recording with a modulated ***laser*** beam the recording ***medium*** changes from a ***hexagonal*** phase to a cubic phase and the light reflectivity increases by 20-40% depending on the Pd content. It is erasable and rerecordable.

ST laser heat mode recording alloy; palladium cobalt alloy optical recording

IT Recording materials
(***optical*** , heat-mode, erasable and rerecordable ***disk*** , with alloy recording layer)

IT 69574-50-1 95359-02-7 110021-11-9 110021-12-0 110021-13-1 110021-14-2 110021-15-3
RL: USES (Uses)
(***laser*** ***disks*** with heat-mode recording layer of, for

erasable and rercordable medium)

L4 ANSWER 41 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1969:475223 CAPLUS
DN 71:75223
ED Entered STN: 12 May 1984
TI Characteristics of structure and growth of obelisk-like quartz crystals
AU Ushakovskii, V. T.; Kashkurov, K. F.; Chernyi, L. N.; Kabanovich, I. V.; Kleshchev, G. V.
CS USSR
SO Vop. Opt. Mol. Spektrosk. (1968) 82-8
From: Ref. Zh., Geol., V. 1969, Abstr. No. 1V213
DT Journal
LA Russian
CC 70 (Crystallization and Crystal Structure)
AB The obelisk-like shape of quartz crystals is characterized morphologically by an absence of ***hexagonal*** prism faces and development of the most acute rhombohedrons. A study of quartz crystals, cut into plates perpendicular to the ***optical*** axis (Z ***medium***) and faces of the most acute rhombohedron (X medium), by the x-ray diffraction method, suggests that obelisk-like crystals grew on the faces of the most acute rhombohedron. Its faces were formed by "discontinuing" of at. planes of the rhombohedrons.
ST structure quartz crystals; growth quartz crystals; obelisk like quartz crystals; quartz crystals obelisk like
IT Crystal growth
(of quartz)
IT 14808-60-7, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(crystal growth and structure of)

L4 ANSWER 42 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1961:130868 CAPLUS
DN 55:130868
OREF 55:24585c-i,24586a-g
ED Entered STN: 22 Apr 2001
TI Liquid crystalline structures in polypeptide solutions
AU Robinson, Conmar
CS Courtaulds Ltd., Maidenhead, UK
SO Tetrahedron (1961), 13, 219-34
CODEN: TETRAB; ISSN: 0040-4020
DT Journal
LA Unavailable
CC 10C (Organic Chemistry: Carbohydrates, Amino Acids, and Proteins)
AB Certain polypeptide solns. form a liquid cryst. phase with remarkable properties including very high optical rotatory power. Many cryst. solids pass at their m.p. through more or less fluid birefringent smectic or nematic mesophases. In the nematic structure, with a lower degree of organization than the smectic, there are no layers but the mols. are arranged with their long axes parallel while being free to move relative to one another in the direction of these axes. Such mesomorphic forms may be produced also by addn. of a limited amt. of a suitable solvent to some substances (soaps, and the polypeptides under discussion) and are stable over a considerable and reproducible range of concn. dependent on the temp. Such "liquid crystals" are definite forms of matter, a knowledge of which is essential for the full understanding of any material which can give rise to them. Solns. of poly-.gamma.-benzyl-L-glutamate (I) in CH2Cl2 (or dioxane, CHCl3, m-cresol) above a certain concn. (A) sep. into 2 liquid phases, the phase of higher concn. being spontaneously birefringent, though at a still higher concn. (B) only the birefringent phase is formed. The birefringent phase forms liquid spherulites growing in size with cooling or concn. of the soln. and coalescing to form a continuous phase. Both the continuous phase and the spherulite show equispaced alternate dark and light lines with a reproducible periodicity (S) dependent on concn., solvent, and temp., but independent of the arrangement of the lines, the optical system, or the shape of the container. Each spherulite shows one radial line of "disinclination" and has polarity, although fluid. The nature of the liquid cryst. structure is more simply understood by considering the patterns arising in a flat rectangular cell where the whole arrangement suggests groups of boxes one inside the other and each such group packed closely among its neighbors.

The structure in the liquid-cryst. phase may be looked upon as derived from a nematic structure by superposition of an axis of torsion of uniform pitch at right angles to the long axes of the mols. A similar twisted structure was proposed by de Vries (CA 45, 8834i) to explain the optical rotatory power of some esters and ethers of cholesterol, which show a very high form-optical rotation assocd. with periodidities smaller than those described for polypeptides. Modification of the de Vries equation gave the expression .theta. = -n2P/.lambda.2.4.5 .times. 104 degrees/micron, where P (2S) and .lambda. are in microns. The neg. sign indicates that the optical rotation is in the opposite sense to that of the helical twist of the torsion. The birefringence of the untwisted ***medium*** (n) was calcd. from the ***optical*** rotation and the microscopic spacing for several prepns. of I and poly(.gamma.-benzyl D-glutamate) (II) in a range of mol. wts., concns., and solvents. Exptl. values of n were obtained from a racemic mixt. of I and II, which oriented spontaneously and had a birefringence uniform through the capillary. The birefringence divided by the vol. concn. was 0.029 and was reproducible. It seems therefore justifiable to assume that the nematic structure observed in the racemic mixt. corresponds to the untwisted form of the structure formed in solns. of I or II. As P, the pitch of the helix, is progressively diminished, the optical rotation changes sign. This nonlinear relationship and change of sign is similar to that of the liquid crystals of the cholesteryl compds. which have the very striking characteristic property of reflecting bright irridescent colors when illuminated with white light. Similar colors have been noted with poly(.gamma.-Et L-glutamate) (III). III (29.0 g.) in 100 g. EtOAc soln. further concd. until on illumination with white light a color towards the red end of the spectrum was reflected back parallel to the incident light, the soln. stirred slowly several days, the uniformly concd. soln. sealed in a 0.5 mm. diameter glass tube, immersed in H2O at 20.degree., the angle .phi. between the incident and reflected light on illumination measured for 6 wave lengths, similar values read at 30 and 40.degree., and the reading repeated at 20.degree.. Calcn. of S from the Bragg equation n.lambda. = 2 S sin .theta. (where .theta. = 90.degree.-.phi./2, and n = 1.4 gave values of 19, 29, and 39 for S .times. 102, showing that the value of S nearly doubled on increasing the temp. by 20.degree.. The more familiar instances of optical rotation, including that produced by the .alpha.-helix, have their origin in the selective absorption of one circularly polarized component of light and the Cotton effect for wave lengths in the neighborhood of the absorption band, the wave lengths of the absorption band being detd. by the chem. constitution of the material. In contrast the "form" optical rotation of the twisted structure in polypeptides and chloresteryl esters and ethers originates in the selective reflection of one circularly-polarized component of light, irridescent colors are observed in the neighborhood of the reflection band with a change of sign of optical rotation on crossing this band, the wave lengths of the reflection band being entirely detd. by the pitch of torsion of the twisted structure and the birefringence of the untwisted medium. Since the sp. rotation of the twisted structure in I solns. was 20,000-140,000.degree., any contribution directly due to .alpha.-helices could be safely neglected. Reversal of the sense of twist in passing from dioxane to CH2Cl2 show that there is no simple relationship between the sense of twist of the macrostructure and the sense of the .alpha.-helix since the b0 value in the Moffitt equation is the same for I in both solvents. Agreement between calcd. and exptl. values suggests that the mol. arrangement in the structure of the birefringent phase consists of parallel rods having, in a plane at right angles to their length, a 2-dimensional ***hexagonal*** arrangement. Qual. similar structures to those of I have been found in solns. of several other polypeptides in org. solvents. It seems probable that the rigidity of the mol. in the .alpha.-helix configuration is an important factor in the formation of the birefringent phase and that the arrangement of the dipoles in a left- or right-handed helix gives rise to the twist characteristic of the structures. Deoxyribonucleic acid (6%) in 0.1M NaCl showed periodic lines after standing several days in a 0.1 mm. deep cell. Although the expt. was of a preliminary nature it seems probable that it was another example of twisted structure and it is tempting to think that this highly organized liquid cryst. phase, which can dissolve other components without its qual. nature being changed, may play a part in providing orientation in chem. reactions involving some of the highly specific optically active mols. found in nature.

IT Peptides

(crystal (liquid) structure in solns. of)
IT Glutamic acid, .gamma.-poly-, polyesters
(liquid cryst. structures in solns. of)

L4 ANSWER 43 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1957:20248 CAPLUS
DN 51:20248
OREF 51:4089f-h
ED Entered STN: 22 Apr 2001
TI Freezing of water. III. Crystallography of disk crystal and dendrites developed from disk crystals
AU Arakawa, Kiyoshi
SO J. Fac. Sci. Hokkaido Univ., Ser. II (1955), 4, 355-7
DT Journal
LA Unavailable
CC 2 (General and Physical Chemistry)
AB cf. C.A. 48, 13313d. Disk crystals suspended in slightly supercooled water were observed under a polarization microscope. All of the growing disk crystals were uniaxial, with the optic axis perpendicular to the disk plane. Disk crystals observed on a glass plate in a cold chamber held at -15.degree. were optically pos. Notched crystals and stellar crystals have the same ***optical*** properties as do ***disk*** crystals. Etch figures were produced on the base plane of a disk crystal placed on a glass plate in a -25.degree. chamber by coating the whole surface with a 2% soln. of poly(vinyl formal) dissolved in ethylene dichloride. The etch figures were circular pits in the early stage that gradually grew into sharp hexagons, all with the same orientation. Similar results were obtained with notched crystals and stellar crystals. By the orientation of the etch pit sides, it was established that these types are single crystals. Disk crystals and the dendrites developed from the disk do not differ from ordinary ice crystals belonging to the ***hexagonal*** system. The circular growth of disk crystals far from other crystals was explained by the uniform radial transfer of the latent heat.
IT Ice
(crystals of, dendrite and disk)
IT Crystals
(dendrite and disk, of ice)
IT Freezing
(of water, crystallography of)
IT 7732-18-5, Water
(freezing of supercooled, on crystals)

L4 ANSWER 44 OF 95 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1955:26829 CAPLUS
DN 49:26829
OREF 49:5130f-h
ED Entered STN: 22 Apr 2001
TI Investigation on zinc sulfide crystals
AU Krumbiegel, Johannes
CS German Acad. Sci., Berlin
SO Zeitschrift fuer Naturforschung (1954), 9a, 903-4
CODEN: ZNTFA2; ISSN: 0372-9516
DT Journal
LA Unavailable
CC 3 (Electronic Phenomena and Spectra)
AB cf. C.A. 47, 8506c. Needle-shaped ZnS crystals were obtained by heating metallic Zn in a quartz tube in an H2S stream at 1100.degree.. These were several cm. long, optically clear, and had a ***hexagonal*** cross section. Under the polarization microscope the direction of extinction coincided with the axis of the needles and was believed to be the crystallographic c-axis. Resublimation of these needles at 1500.degree. in an H2S atm. under reduced pressure yielded disk-shaped ZnS crystals in sizes up to 30 sq. mm. They consisted of various species and showed green, blue, orange, or no ultraviolet fluorescence. The decay times varied from 25 min. for the green- to 15 sec. for the blue-fluorescing crystals. The yellow-fluorescing species exhibited no afterglow. All crystals were photoconducting with great differences in lag. The green-fluorescing crystals required up to 30 min. to reach the max. photocurrent. The blue and orange luminophors required much shorter times, and the nonfluorescing species showed practically no lag in photocond.
IT Crystal structure

Fluorescence
   (of zinc sulfide)
IT Conductivity, electric
   (photo-, of ZnS)
IT 1314-98-3, Zinc sulfide
   (crystals of, ***optical*** properties of ***disk*** - and needleshaped)

L4 ANSWER 45 OF 95 INSPEC (C) 2006 IEE on STN
AN 2006:8722173 INSPEC
TI ***Hexagonal*** Cs2S2O6 crystals - A new high-gain SRS-active material.
AU Kaminskii, A.A. (Inst. of Crystallogr., Russian Acad. of Sci., Moscow, Russia); Haussuhl, E.; Haussuhl, S.; Hulliger, J.; Eichler, H.J.
SO Optics Communications (1 Aug. 2005) vol.252, no.1-3, p.91-6. 11 refs.
   Doc. No.: S0030-4018(05)00354-8
   Published by: Elsevier
   CODEN: OPCOB8 ISSN: 0030-4018
   SICI: 0030-4018(20050801)252:1/3L.91:HCCH;1-R
DT Journal
TC Experimental
CY Netherlands
LA English
AB High-gain stimulated Raman scattering in ***hexagonal*** Cs2S2O6 single crystals has been observed for the first time. All measured multiple Stokes and anti-Stokes generation wavelengths are identified and attributed to the chi (3) active vibration mode (omega SRS1 approximately=1091cm-1) of this cesium dithionate. We classify the Cs2S2O6 compound as promising ***medium*** for Raman ***laser*** converters in the visible and near-IR. [All rights reserved Elsevier].
CC A4270Y Other optical materials; A4265C Stimulated Raman scattering and spectra; CARS; stimulated Brillouin and stimulated Rayleigh scattering and spectra; A4265K Optical harmonic generation, frequency conversion, parametric oscillation and amplification; A4255R Lasing action in other solids; A7830G Infrared and Raman spectra in inorganic crystals; B4110 Optical materials; B4340K Optical harmonic generation, frequency conversion, parametric oscillation and amplification; B4320G Solid lasers
CT CAESIUM COMPOUNDS; OPTICAL HARMONIC GENERATION; OPTICAL MATERIALS; RAMAN LASERS; SOLID LASERS; STIMULATED RAMAN SCATTERING; VIBRATIONAL MODES
ST ***hexagonal crystals*** ; Cs2S2O6 crystals; high-gain material; SRS-active material; stimulated Raman scattering; multiple Stokes generation; antiStokes generation; chi (3) active vibration mode; Raman laser converters; visible spectra; near-IR spectra; Cs2S2O6
CHI Cs2S2O6 ss, Cs2 ss, Cs ss, O6 ss, S2 ss, O ss, S ss
ET Cs*O*S; Cs2S2O6; Cs cp; cp; S cp; O cp; Cs2S2O; Cs; O; S

L4 ANSWER 46 OF 95 INSPEC (C) 2006 IEE on STN
AN 2006:8693781 INSPEC
TI Effects of solvent and ambient humidity on nanodot structures for near-field optical data storage using self-assembled diblock copolymer.
AU Matsuyama, T. (Dept. of Eng., Pulstec Ind. Co. Ltd., Shizuoka, Japan); Kawata, Y.
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (May 2005) vol.44, no.5B, p.3524-8. 26 refs.
   Published by: Japan Soc. Appl. Phys
   CODEN: JAPNDE ISSN: 0021-4922
   SICI: 0021-4922(200505)44:5BL.3524:ESAH;1-N
DT Journal
TC Experimental
CY Japan
LA English
AB We present the formation of nanodot structures on a glass substrate by the self-assembly of a diblock copolymer. The structures can be used as nanopatterned ***media*** for near-field ***optical*** data storage with high data density. Improvements in the carrier-to-noise ratio (CNR) and in the uniformity of the recorded bit marks are expected with these structures. It is found that the structure of nanodots depends strongly on the ambient humidity during dripping and subsequent spin-casting and also on the solvent used. Nanodots of uniform size can be formed on a glass substrate with benzene, toluene, or toluene blended with acetone as a solvent when the ambient humidity is in the range of 60% to 70%. The size of the individual nanodots as well as the distance between

two consecutive nanodots can be controlled, and the nanodots may be aligned like regular ***hexagonal*** close-packed structures by adjusting the volume ratio of acetone to toluene.
CC A4280T Optical storage and retrieval; A4270C Optical glass; A4270J Optical polymers and other organic optical materials; A4285D Optical fabrication, surface grinding; B4120 Optical storage and retrieval; B4110 Optical materials
CT CASTING; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FABRICATION; OPTICAL GLASS; OPTICAL POLYMERS; SELF-ASSEMBLY
ST ambient humidity; nanodot structures; near-field optical data storage; self-assembled diblock copolymer; glass substrate; nanopatterned media; carrier-to-noise ratio; spin-casting; ***hexagonal close-packed*** *** structure***

L4 ANSWER 47 OF 95 INSPEC (C) 2006 IEE on STN
AN 2005:8563693 INSPEC DN A2005-20-4270Q-043; B2005-10-4110-114
TI Superluminal group velocities in a bulk two-dimensional photonic band gap crystal.
AU Solli, D.R.; McCormick, C.F.; Ropers, C.; Chiao, R.Y. (Dept. of Phys., California Univ., Berkeley, CA, USA); Hickmann, J.M.
SO 2003 Conference on Lasers and Electro-Optics Europe (CLEO/Europe 2003) (IEEE Cat. No.03TH8666)
Piscataway, NJ, USA: IEEE, 2003. p.671 of xxvi+758 pp. 2 refs.
Conference: Munich, Germany, 22-27 June 2003
Price: CCCC 0 7803 7734 6/2003/$20.00
ISBN: 0-7803-7734-6
DT Conference Article
TC Experimental
CY United States
LA English
AB The superluminal propagation of wave packets with faster-than-c, infinite, and negative group velocities, has been observed in a wide range of physical systems, including both passive and active ***optical*** ***media*** , we have experimentally demonstrated that superluminal (including infinite and even negative) group velocities can exist for analytic signals whose spectral bandwidth lies within the band gap of a two-dimensional ***hexagonal*** photonic crystal. We believe that our result calls for a generalization of the Kramers-Kronig relations including not only absorption but also other possible "dissipation" channels.
CC A4270Q Photonic bandgap materials; A7820P Photonic band gap (condensed matter); A4225B Optical propagation, transmission and absorption; B4110 Optical materials
CT KRAMERS-KRONIG RELATIONS; LIGHT PROPAGATION; OPTICAL MATERIALS; PHOTONIC CRYSTALS; SPECTRAL LINE BROADENING
ST superluminal group velocity; bulk two-dimensional photonic band gap crystal; wave packets; superluminal propagation; physical system; ***active optical media*** ; ***passive optical media*** ; spectral bandwidth; Kramers-Kronig relation; dissipation channel

L4 ANSWER 48 OF 95 INSPEC (C) 2006 IEE on STN
AN 2004:8209091 INSPEC DN B2005-01-4120-014; C2005-01-5320K-004
TI A partial response read channel for two dimensional optical data storage.
AU Conway, T. (Dept. of ECE, Limerick Univ., Ireland)
SO IEEE Transactions on Consumer Electronics (Nov. 2004) vol.50, no.4, p.1107-12. 8 refs.
Published by: IEEE
Price: CCCC 0098-3063/04/$20.00
CODEN: ITCEDA ISSN: 0098-3063
SICI: 0098-3063(200411)50:4L.1107:PRRC;1-P
DT Journal
TC Practical
CY United States
LA English
AB This paper describes an architecture for a read channel which can be used to recover data from a multi-track ***optical*** ***medium*** . The multi-track format allows for a higher density of data storage as well as a higher data transfer rate for applications such as high density DVDs. The proposed channel is based on a 2D partial response over a ***hexagonal*** lattice and employs a 2D nonlinear equalizer and 2D data detection. Bit error measurements based on sampled data from a prototype disc and optics, and offline software read channel are presented and show

satisfactory performance.
CC B4120 Optical storage and retrieval; B6150D Communication channel equalisation and identification; B6135 Optical, image and video signal processing; B6140M Signal detection; C5320K Optical storage
CT DATA RECORDING; EQUALISERS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL SIGNAL DETECTION; PARTIAL RESPONSE CHANNELS; TELECOMMUNICATION SIGNALLING
ST partial response read channel; two dimensional optical data storage; date recovery; multitrack format; nonlinear equalizer; data detection; offline software read channel; signal processing; optical recording; multidimensional signal detection
ET D

L4 ANSWER 49 OF 95 INSPEC (C) 2006 IEE on STN
AN 2004:8151975 INSPEC DN A2004-23-4265T-006
TI Secondary bifurcations of ***hexagonal*** patterns in a nonlinear optical system: sodium vapor in a single-mirror arrangement.
AU Gamila, D.; Colet, P. (Inst. Mediterrani d'Estudis Avancats, IMEDEA, Palma de Mallorca, Spain); Ackemann, T.; Westhoff, E.G.; Lange, W.
SO 2003 European Quantum Electronics Conference. EQEC 2003 (IEEE Cat No.03TH8665)
Piscataway, NJ, USA: IEEE, 2003. p.103 of xvi+452 pp. 2 refs.
Conference: Munich, Germany, 22-27 June 2003
Price: CCCC 0-7803-7733-8/03/$20.00
ISBN: 0-7803-7733-8
DT Conference Article
TC Theoretical; Experimental
CY United States
LA English
AB This study addresses the problem of secondary bifurcations of ***hexagonal*** patterns through performing a numerical stability analysis of ***hexagonal*** structures in a model of a nonlinear optical system showing such bifurcations. The system under study is based on a single feedback mirror arrangement. A thin nonlinear ***optical*** ***medium*** (sodium vapor in a nitrogen buffer gas atmosphere) is irradiated by a laser beam which is homogeneous in amplitude and phase. The transmitted beam is retroreflected into the medium by a plane high-reflectivity mirror placed behind the medium. During the propagation of the light field to the mirror and back, different points in the transverse plane are coupled due to diffraction. If the system is suitably prepared, the decisive dynamical variable is the longitudinally averaged orientation which is the normalized population difference between the two Zeeman sublevels of the ground state.
CC A4265T Optical chaos and related effects; A3260V Zeeman effect in atoms; A4260H Laser beam characteristics and interactions; A4280A Optical lenses and mirrors
CT BIFURCATION; GROUND STATES; LASER BEAM EFFECTS; MIRRORS; NONLINEAR OPTICS; OPTICAL FEEDBACK; SODIUM; ZEEMAN EFFECT
ST secondary bifurcations; ***hexagonal patterns*** ; nonlinear optical system; sodium vapor; single-mirror arrangement; numerical stability analysis; single feedback mirror; ***nonlinear optical medium*** ; nitrogen buffer gas atmosphere; laser beam irradiation; retroreflection; plane high-reflectivity mirror; diffraction; Zeeman sublevels; ground state; Na
CHI Na el
ET Na

L4 ANSWER 50 OF 95 INSPEC (C) 2006 IEE on STN
AN 2004:8139271 INSPEC DN A2004-23-6865-008; B2004-11-0520F-083
TI Development of CdSSe/CdS VCSELs for application to Laser Cathode Ray Tubes.
AU O'Donnell, K.P.; Trager-Cowan, C.; Sweeney, F. (Dept. of Phys., Strathclyde Univ., Glasgow, UK); kutzenov, P.I.; Jitov, V.A.; Zakharov, L.Yu.; Yakushcheva, G.G.; Kozlovsky, V.I.; Bondarev, V.Yu.; Sannikov, D.A.
SO Physica Status Solidi C (2004) no.6, p.673-7. 13 refs.
Published by: Wiley-VCH
CODEN: PSSCGL ISSN: 1610-1634
SICI: 1610-1634(2004)6L.673:DCVA;1-Y
Conference: International Conference on Physics of Light-Matter Coupling in Nanostructures (PLMCN3). Acireale, Sicily, Italy, 1-4 Oct 2003
DT Conference Article; Journal
TC Practical; Experimental

CY   Germany, Federal Republic of
LA   English
AB   This report summarises recent progress towards the realisation of Laser Cathode Ray Tube (LCRT) devices on the basis of II-VI semiconductors. Although such devices were demonstrated over 30 years ago, using bulk crystalline materials as the active ***media*** , practical ***lasers*** that operate at room temperature for extended periods of time are not yet readily available. We aim to overcome this roadblock by reducing the threshold power densities of working lasers. By embedding heterostructures, grown using metalorganic vapour phase epitaxy (MOVPE), within all-dielectric microcavities, the necessary threshold reductions can be made. The construction and testing of an exemplar device, based upon CdSSe/CdS (hex) multiple quantum wells, is described.
CC   A6865 Low-dimensional structures: growth, structure and nonelectronic properties; A8115H Chemical vapour deposition; A4255P Lasing action in semiconductors; B0520F Chemical vapour deposition; B2360 Electron beam scanned tubes; B4320J Semiconductor lasers; B2520D II-VI and III-V semiconductors
CT   CADMIUM COMPOUNDS; CATHODE-RAY TUBES; II-VI SEMICONDUCTORS; MICROCAVITIES; MOCVD; SEMICONDUCTOR LASERS; SEMICONDUCTOR QUANTUM WELLS; SURFACE EMITTING LASERS; VAPOUR PHASE EPITAXIAL GROWTH
ST   CdSSe-CdS multiple quantum wells; laser cathode ray tubes; II-VI semiconductors; room temperature; embedding heterostructures; metalorganic vapour phase epitaxy; dielectric microcavities; threshold power density; MOVPE; ***hexagonal structure*** ; 293 to 298 K; CdSSe-CdS
CHI CdSSe-CdS int, CdSSe int, CdS int, Cd int, Se int, S int, CdSSe ss, Cd ss, Se ss, S ss, CdS bin, Cd bin, S bin
PHP temperature 2.93E+02 to 2.98E+02 K
ET   Cd*S*Se; Cd sy 3; sy 3; S sy 3; Se sy 3; CdSSe; Cd cp; cp; S cp; Se cp; Cd*S; CdS; CdSSe-CdS; Cd; Se; S

L4   ANSWER 51 OF 95 INSPEC (C) 2006 IEE on STN
AN   2004:8109474 INSPEC DN B2004-10-1265B-099; C2004-10-5120-070
TI   FPGA implementation of a 2D equalizer for optical storage.
AU   Hogan, J.; Conway, R. (Dept. of Electron. & Comput. Eng., Limerick Univ., Ireland)
SO   Irish Signals and Systems Conference 2004
Editor(s): Sezer, S.; McLoone, S.; Kruger, U.
Stevenage, UK: IEE, 2004. p.290-5 of 699 pp. 11 refs.
Conference: Belfast, Ireland, 30 June-2 July 2004
Sponsor(s): IEE; InvestNI; Virtual Eng. Centre; ECIT; Northern Ireland Sci. Park; Investment Belfast; IEEE; School of Elec. and Electon. Eng.; Agilent Technol.; Asidua Ltd.; Xilinx Inc
ISBN: 0-86341-440-0
DT   Conference Article
TC   Practical
CY   United Kingdom
LA   English
AB   The paper examines the implementation of a 2D equalizer with programmable coefficients onto a Xilinx FPGA. The 2D equalizer is used as part of a new innovative proposal for storage of ***information*** onto an ***optical*** ***disc*** . ***Information*** is written onto the ***disc*** with a 2D character. The 2D ***optical*** ***disc*** is based on a broad spiral with a ***hexagonal*** lattice to store the information. Various FPGA implementations of the 2D equalizer are specified and analysed in terms of performance over area and speed, to determine the most efficient solution.
CC   B1265B Logic circuits; B6150D Communication channel equalisation and identification; B4120 Optical storage and retrieval; B1265A Digital circuit design, modelling and testing; B2220 Integrated circuits; B2570A Semiconductor integrated circuit design, layout, modelling and testing; B6140B Filtering methods in signal processing; C5120 Logic and switching circuits; C5210 Logic design methods; C5320K Optical storage
CT   EQUALISERS; FIELD PROGRAMMABLE GATE ARRAYS; FIR FILTERS; INTEGRATED CIRCUIT DESIGN; LOGIC DESIGN; ***OPTICAL*** ***DISC*** STORAGE; SIGNAL PROCESSING
ST   Xilinx FPGA; 2D equalizer; optical storage; 2D character; 2D signal processing; FIR filter
ET   D

L4   ANSWER 52 OF 95 INSPEC (C) 2006 IEE on STN
AN   2004:8053683 INSPEC DN A2004-18-4280T-016; B2004-09-4120-026

TI   Nonlinear signal-processing model for signal generation in multilevel
     two-dimensional optical storage.
AU   Fagoonee, L. (Dept. of Commun. Syst., Lancaster Univ., UK); Coene, W.M.J.;
     Moinian, A.; Honary, B.
SO   Optics Letters (15 Feb. 2004) vol.29, no.4, p.385-7. 7 refs.
     Published by: Opt. Soc. America
     Price: CCCC 0146-9592/04/040385-03$15.00/0
     CODEN: OPLEDP ISSN: 0146-9592
     SICI: 0146-9592(20040215)29:4L.385:NSPM;1-T
DT   Journal
TC   Theoretical
CY   United States
LA   English
AB   A two-dimensional optical storage (TwoDOS) format with binary modulation
     is being developed in which channel bits are arranged on a two-dimensional
     hexagonal lattice]W. M. J. Coene, in Optical Data Storage, Vol.
     88 of OSA Trends in Optics and Photonics Series (Optical Society of
     America, Washington, D.C., 2003), pp. 90-92]. The aim is to increase the
     capacity by a factor of 2 and the data rate by a factor of 10 over
     third-generation Blu-ray Disc technology. Following a route similar to
     that used in one-dimensional conventional optical storage [Jpn. J. Appl.
     Phys. 42, 1074 (2003)] could lead to a further increase in capacity by the
     addition of another dimension to writing data, such as the use of multiple
     levels instead of the two levels (pit and land) used in the binary TwoDOS
     disk format. We present a nonlinear signal-processing model for signal
     waveform generation as a function of the M-ary channel symbols, as well as
     simulated signal readouts for multilevel TwoDOS.
CC   A4280T Optical storage and retrieval; A4230 Optical information, image
     formation and analysis; B4120 Optical storage and retrieval; B6135
     Optical, image and video signal processing
CT   ***OPTICAL***   ***DISC***   STORAGE; OPTICAL INFORMATION PROCESSING
ST   nonlinear signal-processing model; signal generation; multilevel
     two-dimensional optical storage; binary modulation; channel bits;
     two-dimensional hexagonal lattice ; third-generation Blu-ray Disc
     technology; one-dimensional conventional optical storage; TwoDOS disk
     format; signal waveform generation; M-ary channel symbols; multilevel
     TwoDOS
ET   D*O*S*T; TwoDOS; T cp; cp; D cp; O cp; S cp; J

L4   ANSWER 53 OF 95 INSPEC (C) 2006 IEE on STN
AN   2004:8043591 INSPEC   DN A2004-18-4280T-011; B2004-09-4120-023;
     C2004-09-5320K-010
TI   Nonlinear signal-processing model for signal generation in multilevel
     two-dimensional optical storage.
AU   Fagoonee, L. (Dept. of Commun. Syst., Lancaster Univ., UK); Coene, W.M.J.;
     Moinian, A.; Honary, B.
SO   Optics Letters (15 Feb. 2004) vol.29, no.4, p.385-7. 7 refs.
     Published by: Opt. Soc. America
     Price: CCCC 0146-9592/04/040385-03$15.00/0
     CODEN: OPLEDP ISSN: 0146-9592
     SICI: 0146-9592(20040215)29:4L.385:NSPM;1-T
DT   Journal
TC   Theoretical
CY   United States
LA   English
AB   A two-dimensional optical storage (TwoDOS) format with binary modulation
     is being developed in which channel bits are arranged on a two-dimensional
     hexagonal lattice [W. M. J. Coene, in Optical Data Storage, Vol.
     88 of OSA Trends in Optics and Photonics Series (Optical Society of
     America, Washington, D.C., 2003), pp. 90-92]. The aim is to increase the
     capacity by a factor of 2 and the data rate by a factor of 10 over
     third-generation Blu-ray Disc technology. Following a route similar to
     that used in one-dimensional conventional optical storage [Jpn. J. Appl.
     Phys. 42, 1074 (2003)] could lead to a further increase in capacity by the
     addition of another dimension to writing data, such as the use of multiple
     levels instead of the two levels (pit and land) used in the binary TwoDOS
     disk format. We present a nonlinear signal-processing model for signal
     waveform generation as a function of the M-ary channel symbols, as well as
     simulated signal readouts for multilevel TwoDOS.
CC   A4280T Optical storage and retrieval; A4230K Fourier transform optics;
     A4265 Nonlinear optics; B4120 Optical storage and retrieval; B6120
     Modulation and coding methods; B4340 Nonlinear optics and devices; B6140

Signal processing and detection; C5320K Optical storage; C1260S Signal
processing theory
CT FOURIER TRANSFORM OPTICS; INTERSYMBOL INTERFERENCE; LIGHT DIFFRACTION;
NONLINEAR OPTICS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL
MODULATION; SIGNAL PROCESSING
ST nonlinear signal-processing model; signal generation; multilevel
two-dimensional optical storage; binary modulation; ***two-dimensional***
*** hexagonal lattice*** ; optical storage capacity; simulated signal
readouts; ***optical disk format*** ; scalar diffraction model; M-ary
symbol detection
ET D*O*S*T; TwoDOS; T cp; cp; D cp; O cp; S cp; J

L4 ANSWER 54 OF 95 INSPEC (C) 2006 IEE on STN
AN 2004:7915170 INSPEC DN A2004-10-4280T-001; B2004-05-4120-003
TI Nonlinear signal-processing model for scalar diffraction in optical
recording.
AU Coene, W.M.J. (Philips Res. Lab., Eindhoven, Netherlands)
SO Applied Optics (10 Nov. 2003) vol.42, no.32, p.6525-35. 18 refs.
Published by: Opt. Soc. America
Price: CCCC 0003-6935/03/326525-11$15.00/0
CODEN: APOPAI ISSN: 0003-6935
SICI: 0003-6935(20031110)42:32L.6525:NSPM;1-8
DT Journal
TC Theoretical
CY United States
LA English
AB A nonlinear signal processing model is derived for the optical recording
channel based on scalar diffraction theory. In this model, the signal
waveform is written in closed form as an explicit function of the channel
bits that are stored on an ***optical*** ***disk*** , thereby
comprising both linear and nonlinear terms. Its explicit dependence on the
channel bits makes this model well suited for signal-processing purposes.
With the model it is also convenient to assess the importance of nonlinear
contributions to the signal waveform. The model is applied for
one-dimensional optical storage as well as for two-dimensional (2D)
optical storage in which bits are arranged on a 2D ***hexagonal***
lattice. Signal folding is addressed as a typical nonlinear issue in 2D
optical storage and can be eliminated by recording of pit marks of sizes
considerably smaller than the size of the ***hexagonal*** bit cell.
Further simplifications of the model with only a limited number of channel
parameters are also derived.
CC A4280T Optical storage and retrieval; A4230D Theory of optical information
and image processing; A4225F Optical diffraction and scattering; B4120
Optical storage and retrieval; B6135 Optical, image and video signal
processing
CT LIGHT DIFFRACTION; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL
INFORMATION PROCESSING
ST nonlinear signal-processing model; scalar diffraction; optical recording;
signal waveform; explicit function; channel bits; ***optical disk*** ;
one-dimensional optical storage; two-dimensional optical storage; ***2D***
*** hexagonal lattice*** ; signal folding; pit marks; ***hexagonal bit***
*** cell*** ; channel parameters
ET D

L4 ANSWER 55 OF 95 INSPEC (C) 2006 IEE on STN
AN 2004:7892695 INSPEC DN B2004-04-4120-020
TI Signal processing and coding for two-dimensional optical storage.
AU Immink, A.H.J.; Coene, W.M.J.; van der Lee, A.M.; Busch, C.; Hekstra, A.P.
(Philips Res. Labs., Eindhoven, Netherlands); Bergmans, J.W.M.; Riani, J.;
Beneden, S.J.L.V.; Conway, T.
SO GLOBECOM '03. IEEE Global Telecommunications Conference (IEEE Cat.
No.03CH37489)
Piscataway, NJ, USA: IEEE, 2003. p.3904-8 vol.7 of cv+4209 pp. 9 refs.
Conference: San Francisco, CA, USA, 1-5 Dec 2003
Price: CCCC 0-7803-7974-8/03/$17.00
ISBN: 0-7803-7974-8
DT Conference Article
TC Practical; Theoretical
CY United States
LA English
AB The paper introduces the concept of two-dimensional optical storage
(TwoDOS). In this concept, bits are written in a broad spiral consisting

of a number of bit-rows stacked together in a ***hexagonal*** packing. Bits with a value '1' are represented physically as circular pit-holes on the disc, while bits with a value '0' are characterized by the absence of such a pit-hole. A scalar diffraction model is used to calculate the signal levels for various diameters of the pits. A stripe-wise Viterbi detector is proposed to perform 2D bit-detection with a limited state complexity of the trellis. Simulation results are shown for various diameters of the pits. A 2D modulation code is applied to eliminate patterns that yield a high probability of erroneous detection.

CC B4120 Optical storage and retrieval; B6120B Codes; B6140M Signal detection

CT COMPUTATIONAL COMPLEXITY; ENCODING; LIGHT DIFFRACTION; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL TRANSFER FUNCTION; SIGNAL PROCESSING; VITERBI DETECTION

ST signal processing; coding; two-dimensional optical storage; stacked bit-rows; ***hexagonal packing*** ; circular pit-holes; scalar diffraction model; stripe-wise Viterbi detector; 2D bit-detection; 2D modulation code; erroneous detection probability; modulation transfer function

ET D*O*S*T; TwoDOS; T cp; cp; D cp; O cp; S cp; D

L4 ANSWER 56 OF 95 INSPEC (C) 2006 IEE on STN

AN 2003:7805148 INSPEC DN A2004-02-4280T-023

TI Crystallization in eutectic materials of phase change optical memory.

AU Okuda, M. (Okuda Tech. Office, Osaka, Japan); Inaba, H.; Usuda, S.

SO Proceedings of the SPIE - The International Society for Optical Engineering (2003) vol.5060, p.145-9. 7 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/03/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2003)5060L.145:CEMP;1-Z
Conference: Sixth International Symposium on Optical Storage (ISOS 2002). Wuhan, China, 22-25 Sept 2002
Sponsor(s): SPIE; Shanghai Inst. Opt. & Fine Mechanics; Huazhong Univ. Sci. & Technol.; et al

DT Conference Article; Journal

TC Experimental

CY United States

LA English

AB For the materials of eutectic composition (AgInSbTe) using as the phase change optical memory, Sb rich recording layer have been utilized in order to the rapid crystallization. But, the mechanism of excess Sb addition has not been clear, because a eutectic material is thought to cause the phase separation in its solidification process. Recently, it was reported that a melt-quenched crystalline states of eutectic AgInSbTe and SbTe with excess Sb has a quasi-equilibrium state with single phase ***hexagonal*** structure based Sb(R3m) and some Sb atoms are randomly replaced with Te atoms. In this paper, we report the excess Sb effect for the dynamics of rapid crystallization in eutectic amorphous films. This crystallization mechanism describe the propagation with high velocity in the interface separating the crystalline and amorphous phase for AgInSbTe and Ge(Sb..Te3)+Sb materials. From these analysis, it is clear that the crystallization is grown up in the boundary of amorphous-crystalline region of eutectic materials, which is different from the stoichiometric Ge2Sb2Te5 media. Under favorable conditions, a self sustained (explosive) process results by laser irradiation. Then, once crystallization has been initiated in the amorphous-crystalline region, the entire amorphous films has been crystallized.

CC A4280T Optical storage and retrieval; A4270C Optical glass; A6140D Structure of glasses

CT CHALCOGENIDE GLASSES; CRYSTALLISATION; GERMANIUM COMPOUNDS; INDIUM COMPOUNDS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; OPTICAL GLASS; SILVER COMPOUNDS

ST phase change optical memory; eutectic materials; rapid crystallization; melt-quenched crystalline states; excess Sb effect; amorphous films; amorphous-crystalline region; laser irradiation; phase-boundary dynamics; temperature distribution; AgInSbTe; Ge2Sb2Te

CHI AgInSbTe int, Ag int, In int, Sb int, Te int, AgInSbTe ss, Ag ss, In ss, Sb ss, Te ss; Ge2Sb2Te int, Ge2 int, Sb2 int, Ge int, Sb int, Te int, Ge2Sb2Te ss, Ge2 ss, Sb2 ss, Ge ss, Sb ss, Te ss

ET Ag*In*Sb*Te; Ag sy 4; sy 4; In sy 4; Sb sy 4; Te sy 4; AgInSbTe; Ag cp; cp; In cp; Sb cp; Te cp; Sb; Sb*Te; Sb sy 2; sy 2; Te sy 2; SbTe; Te; Ge*Sb; Ge sy 2; Ge(Sb; Ge cp; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3;

Ge2Sb2Te5; Ge2Sb2Te; Ag; In; Ge

L4 ANSWER 57 OF 95 INSPEC (C) 2006 IEE on STN
AN 2003:7795996 INSPEC DN A2004-01-8115G-007; B2004-01-0520D-009
TI TEM of epitaxial thin films controlled by planes extending (near) normal to interface; with application to two methods to reduce crystal orientations in polycrystalline magnetic media.
AU MoberlyChan, W. (Center for Imaging & Mesoscale Structures, Harvard Univ., Cambridge, MA, USA); Dorsey, P.
SO Journal of the European Ceramic Society (2003) vol.23, no.15, p.2879-91. 18 refs.
Published by: Elsevier
Price: CCCC 0955-2219/03/$30.00
CODEN: JECSER ISSN: 0955-2219
SICI: 0955-2219(2003)23:15L.2879:ETFC;1-1
Conference: International Workshop on Interfaces: Ceramic and Metal Interfaces: Control at the Atomic Level. Oviedo, Spain, 23-27 June 2002
DT Conference Article; Journal
TC Experimental
CY United Kingdom
LA English
AB This work is a study of heteroepitaxial interfaces as applied to multilayer-thin films for magnetic ***information*** storage ***media*** . With a goal to develop a film crystallography that optimizes the alignment of magnetic dipoles to coincide with the write/read signal of the recording head, two TEM observations have elucidated a better understanding of what controls heteroepitaxial interfaces. The classical approach to establishing "lattice matching" of interfaces is to model the top plane of atoms of the substrate and then align the next plane of atoms in the subsequently deposited film, i.e. plane A and plane B should "match" (with minimal misfit), with both planes being parallel to the interface. Such mechanism is valid for idealized slow MBE growth where the planes remain atomically flat. However, most film deposition conditions quickly violate this atomically flat configuration. Here growth on a roughened interface is shown to be controlled by the matching of planes that extend (normal or near-normal) across the interface. A second classical observation is the nucleation of bi-crystals, which naturally increases the number of crystal orientations in subsequent films. However, this work exhibits two cases of reducing orientations! One case has a 3-D isotropically oriented cubic film followed by a ***hexagonal*** film with 2-&-1/4-D isotropy, and a second case where a 2-D random cubic film is followed by a ***hexagonal*** film with 1-&-1/2-D isotropy. The understanding and control of these heteroepitaxial interfaces enables reduction of film orientations to enhance properties, such as 100 Gigabit per-square-inch magnetic recording.
CC A8115G Vacuum deposition; A7570C Interfacial magnetic properties; A8140R Electrical and magnetic properties (related to treatment conditions); A7530C Magnetic moments and susceptibility in magnetically ordered materials; A7550S Magnetic recording materials; A6848 Solid-solid interfaces; A7550R Magnetism in interface structures; B0520D Vacuum deposition; B3120B Magnetic recording; B3110M Magnetic multilayers
CT CHROMIUM ALLOYS; COBALT ALLOYS; HARD DISCS; MAGNETIC EPITAXIAL LAYERS; MAGNETIC HEADS; MAGNETIC MOMENTS; MAGNETIC MULTILAYERS; MOLECULAR BEAM EPITAXIAL GROWTH; NUCLEATION; TRANSMISSION ELECTRON MICROSCOPY; VACUUM DEPOSITION
ST TEM; epitaxial thin films; crystal orientations; polycrystalline magnetic media; heteroepitaxial interfaces; multilayer-thin films; ***magnetic*** *** information storage media*** ; film crystallography; magnetic dipoles; write signal; read signal; lattice matching; MBE growth; film deposition; roughened interface; nucleation; 3-D isotropically oriented cubic film; 2-&-1/4-D isotropy; 2-D random cubic film; 1-&-1/2-D isotropy; ***hexagonal film***
CHI SiO2 ss, Al ss, Co ss, Cr ss, Ni ss, O2 ss, Si ss, O ss; Co ss, Cr ss, Ni ss
ET B; D; O*Si; SiO; Si cp; cp; O cp; Al; Co; Cr; Ni; O; Si

L4 ANSWER 58 OF 95 INSPEC (C) 2006 IEE on STN
AN 2002:7315856 INSPEC DN A2002-16-4283-021; B2002-08-4145-023
TI Evaluation of a diffractive microlens-array beam shaper for use in acceleration of laser-driven flyers.
AU Trott, W.M.; Setchell, R.E.; Castaneda, J.N.; Berry, D.M. (Sandia Nat.

Labs., Albuquerque, NM, USA)

SO Proceedings of the SPIE - The International Society for Optical Engineering (2001) vol.4443, p.166-77. 18 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/01/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2001)4443L.166:EDMA;1-B
Conference: Laser Beam Shaping II. San Diego, CA, USA, 2-3 Aug 2001
Sponsor(s): SPIE; NASA Langley Res Ctr

DT Conference Article; Journal

TC Application; Practical; Experimental

CY United States

LA English

AB A promising new tool in shock wave physics is the generation of shock waves in test materials through the impact of small, ***laser*** -accelerated ***discs*** ('flyers'). In order to achieve the necessary one-dimensional condition of uniaxial strain in the shock-loaded material, it is vital that flyers maintain a nearly planar geometry during the acceleration and impact processes. The geometry of the flyer is significantly influenced by the spatial intensity profile of the driving laser beam. With the goal of achieving a nearly uniform drive intensity for this application, we have evaluated a diffractive microlens-array beam shaper for use with a high-energy Nd:glass laser driver. Based on the near-field spatial profile of this multimode laser, a 30-mm-diameter array containing multiple ***hexagonal*** diffractive lenslets was designed and fabricated. In combination with a primary integrator lens of 76.2-mm focal length, this optical element was intended to produce a uniform intensity distribution over a 2-mm-diameter spot at the focal plane of the primary lens. Beam profiling studies were performed to determine the performance of this optical assembly. At the focal plane of the primary lens, the beam shaping optics generated a reasonably uniform profile over a large portion of the focused beam area. However, a small amount of undiffracted light resulted in a high-intensity, on-axis spike. A beam profile approaching the desired 'top hat' geometry could be obtained by moving the flyer launch plane a few mm inside or outside of the focal plane. The planarity of flyers generated using this optical assembly was evaluated using a line-imaging, optically recording velocity interferometer system (ORVIS). Results of these measurements demonstrate the deleterious effect of the on-axis spike on flyer planarity. Acceptable conditions for useful flyer impact experiments can be obtained by operating at a position that provides a near-top-hat profile.

CC A4283 Micro-optical devices and technology; A4215E Optical system design; A4285D Optical fabrication, surface grinding; A4250V Mechanical effects of light; A4255R Lasing action in other solids; A4260B Design of specific laser systems; A0760L Optical interferometry; A6265 Acoustic properties of solids; A4740N Shock-wave interactions; A4262E Metrological applications of lasers; A4260H Laser beam characteristics and interactions; A4280A Optical lenses and mirrors; A0630M Measurement of mechanical variables; B4145 Micro-optical devices and technology; B4320G Solid lasers; B4360E Metrological applications of lasers; B7320G Mechanical variables measurement

CT DIFFRACTIVE OPTICAL ELEMENTS; LASER BEAMS; LASER MODES; LIGHT INTERFEROMETRY; MEASUREMENT BY LASER BEAM; MICROLENSES; OPTICAL ARRAYS; OPTICAL DESIGN TECHNIQUES; OPTICAL FABRICATION; OPTICAL FOCUSING; RADIATION PRESSURE; SHOCK MEASUREMENT; SHOCK WAVES; SOLID LASERS

ST diffractive microlens-array beam shaper; laser-driven flyers; shock wave physics; test materials; ***laser-accelerated discs*** ; shock wave generation; uniaxial strain; shock loaded material; nearly planar geometry; impact processes; spatial intensity profile; driving laser beam; uniform drive intensity; near-field spatial profile; multimode laser; ***hexagonal diffractive lenslets*** ; primary integrator lens; focal length; optical element; uniform intensity distribution; focal plane; beam profiling studies; optical assembly; beam shaping optics; undiffracted light; on-axis spike; beam profile; top hat geometry; flyer launch plane; optically recording velocity interferometer system; flyer impact experiments; Nd:glass laser driver; optical fabrication; optical design; 30 mm; 2 mm

CHI Nd ss, Nd el, Nd dop

PHP size 3.0E-02 m; size 2.0E-03 m

ET Nd

L4 ANSWER 59 OF 95 INSPEC (C) 2006 IEE on STN

AN 2002:7315738 INSPEC DN A2002-16-4255R-010; B2002-08-4320G-021
TI Nd:BeLaAl11O19: a promising new ***laser*** ***medium*** for helium ***optical*** pumping at 1080 nm.
AU Petrov, V.V.; Pestryakov, E.V.; Nyushkov, I.N.; Trunov, V.I.; Kirpichnikov, A.V. (Inst. of Laser Phys., Acad. of Sci., Novosibirsk, Russia); Alimpiev, A.I.
SO Laser Physics (March 2002) vol.12, no.3, p.586-90. 12 refs.
Published by: MAIK Nauka/Interperiodica Publishing
CODEN: LAPHEJ ISSN: 1054-660X
SICI: 1054-660X(200203)12:3L.586:BPLM;1-1
DT Journal
TC Experimental
CY Russian Federation
LA English
AB The new laser crystals BeLaAl11O19:Nd+3 (HALB:Nd) with Nd concentrations ranging from 1.5 to 7 * 1020 cm-3 were grown by Czochralski methods. The HALB:Nd material has broad absorption bands at 580, 740 and 790 nm, the latest corresponding to laser diode emission. The broadest emission lines at 1050 and 1080 nm offer potential for generation of ultrashort laser pulses with femtosecond durations. The intensity parameters Omega lambda , spontaneous emission probabilities, the inter-manifold branching ratios and fluorescent lifetime have been calculated by means of Judd-Ofelt theory and compared with experimental results. The ***laser*** properties of this new active ***medium*** were investigated.
CC A4255R Lasing action in other solids; A7855H Photoluminescence in other inorganic materials; A7840H Visible and ultraviolet spectra of other nonmetals; A7830G Infrared and Raman spectra in inorganic crystals; A3280B Atomic level crossing, optical pumping, population inversion, stimulated emission; A7850E Impurity and defect absorption in insulators; B4320G Solid lasers
CT BERYLLIUM COMPOUNDS; FLUORESCENCE; HELIUM NEUTRAL ATOMS; IMPURITY ABSORPTION SPECTRA; INFRARED SPECTRA; LANTHANUM COMPOUNDS; NEODYMIUM; OPTICAL PUMPING; RADIATIVE LIFETIMES; SOLID LASERS; SPONTANEOUS EMISSION; VISIBLE SPECTRA
ST Nd:BeLaAl11O19; ***laser medium*** ; helium optical pumping; HALB:Nd; Nd concentrations; Czochralski methods; broad absorption bands; ***hexagonal aluminate of beryllium-lanthanum*** ; laser diode emission; emission lines; ultrashort laser pulses; femtosecond durations; intensity parameters; spontaneous emission probabilities; inter-manifold branching ratios; fluorescent lifetime; Judd-Ofelt theory; 3He atoms; 4He atoms; 1080 nm; 580 nm; 740 nm; 790 nm; 1050 nm; BeLaAl11O19:Nd
CHI BeLaAl11O19:Nd ss, BeLaAl11O19 ss, Al11 ss, O19 ss, Al ss, Be ss, La ss, Nd ss, O ss, Nd el, Nd dop
PHP wavelength 1.08E-06 m; wavelength 5.8E-07 m; wavelength 7.4E-07 m; wavelength 7.9E-07 m; wavelength 1.05E-06 m
ET Al*Be*La*Nd*O; Al sy 5; sy 5; Be sy 5; La sy 5; Nd sy 5; O sy 5; Nd:BeLaAl11O19; BeLaAl11O19 doping; doped materials; BeLaAl11O19:Nd; BeLaAl11O19:Nd+3; Nd+3 doping; Be cp; cp; La cp; Al cp; O cp; Nd; He; 3He; is; He is; 4He; Nd doping; Al*Be*La*O; Al sy 4; sy 4; Be sy 4; La sy 4; O sy 4; BeLaAl11O; Al; O; Be; La

L4 ANSWER 60 OF 95 INSPEC (C) 2006 IEE on STN
AN 2002:7302738 INSPEC DN A2002-15-4280T-076; B2002-08-4120-006; C2002-08-5320K-007
TI Material characterization and application of eutectic SbTe based phase-change ***optical*** recording ***media*** .
AU Horie, M.; Ohno, T.; Nobukuni, N.; Kiyono, K.; Hashizume, T.; Mizuno, M. (Yokohama Inf. & Electron. Res. Center, Mitsubishi Chem. Corp., Yokohama, Japan)
SO Proceedings of the SPIE - The International Society for Optical Engineering (2002) vol.4342, p.76-87. 33 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/02/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2002)4342L.76:MCAE;1-L
Conference: Optical Data Storage 2001. Santa Fe, NM, USA, 22-25 April 2001
Sponsor(s): SPIE; OSA- Opt. Soc. America; IEEE/Lasers & Electro-Opt. Soc
DT Conference Article; Journal
TC General Review; Experimental
CY United States
LA English
AB A brief review is described on the material characterization(structure,

and crystallization and amorphization process) and application of the Ge(Sb70Te30)+Sb alloy. A mechanism to enable fast crystalline growth is discussed based on its single phase, ***hexagonal*** crystalline structure. A competitive process of amorphization and re-crystallization during re-solidification is discussed with a simple simulation model, where it is suggested that continuous crystalline growth from the boundary of molten area assures no resolution limit in the formation of amorphous mark edge. Two important concepts of "enhanced recrystallization" and "2T-period divided pulse strategy" are proposed to fully utilize this class of material. The enhanced recrystallization realizes precise amorphous mark size control, realizing high density multi-level recording. The 2T-period divided pulse strategy resolves a pre-mature amorphization issue due to an insufficient cooling period in the case of over 100 MHz clock frequency for high speed recording. Finally, it is reported that 120 Mbps digital video recording (DVR) and over 40 GB multi-level recording on CD size single layer are feasible.

CC A4280T Optical storage and retrieval; A4270Y Other optical materials; A8130H Constant-composition solid-solid phase transformations: polymorphic, massive, and order-disorder; A6470K Solid-solid transitions; B4120 Optical storage and retrieval; B4110 Optical materials; C5320K Optical storage

CT AMORPHISATION; ANTIMONY ALLOYS; CRYSTALLISATION; EUTECTIC ALLOYS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL MATERIALS; SOLID-STATE PHASE TRANSFORMATIONS; TELLURIUM ALLOYS

ST ***eutectic SbTe based phase-change optical recording media*** ; material characterization; review; crystallization; amorphization process; fast crystalline growth; ***single phase hexagonal crystalline*** *** structure*** ; amorphization; re-solidification; simulation model; continuous crystalline growth; molten area; amorphous mark edge; enhanced recrystallization; 2T-period divided pulse strategy; precise amorphous mark size control; high density multi-level recording; pre-mature amorphization; cooling period; clock frequency; high speed recording; digital video recording; multi-level recording; CD size single layer; ***optical disc storage*** ; 40 GB; 100 MHz; GeSbTe; SbTe

CHI GeSbTe ss, Ge ss, Sb ss, Te ss; SbTe bin, Sb bin, Te bin

PHP memory size 4.3E+10 Byte; frequency 1.0E+08 Hz

ET Sb*Te; Sb sy 2; sy 2; Te sy 2; SbTe; Sb cp; cp; Te cp; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge(Sb70Te; Ge cp; Sb; T; GeSbTe; Ge; Te

L4 ANSWER 61 OF 95 INSPEC (C) 2006 IEE on STN

AN 2001:7102540 INSPEC DN A2002-01-4270J-004; B2002-01-4110-010

TI Polymeric nanostructured material for high-density three-dimensional optical memory storage.

AU Siwick, B.J.; Kalinina, O.; Kumacheva, E.; Miller, R.J.D. (Dept. of Chem. & Dept. of Phys., Univ. of Toronto, Toronto, Ont., Canada); Noolandi, J.

SO Journal of Applied Physics (15 Nov. 2001) vol.90, no.10, p.5328-34. 19 refs.
Doc. No.: S0021-8979(01)04621-7
Published by: AIP
Price: CCCC 0021-8979/2001/90(10)/5328(7)/$18.00
CODEN: JAPIAU ISSN: 0021-8979
SICI: 0021-8979(20011115)90:10L.5328:PNMH;1-O

DT Journal

TC Experimental

CY United States

LA English

AB The unique properties of a polymer photonic crystal are examined with respect to applications as a ***medium*** for high-density three-dimensional ***optical*** data storage ***media*** . The nanocomposite material was produced from core-shell latex particles, in which the latex cores contained dye-labeled polymer. Nonfluorescent latex shells were attached to the core particles. Upon annealing, the close-packed core-shell particles formed a nanostructured material with the fluorescent particles periodically embedded into the optically inert matrix in a ***hexagonal*** close-packed structure. A two-photon laser scanning microscope was used to write bits of information into the material by photobleaching the optically sensitive particles and, under much lower fluence, read out the resulting image. Relative to conventional homogeneous storage media, the nanostructured periodic material is shown to increase the effective optical storage density by at least a factor of 2 by spatially localizing the optically active region and imposing an optically inactive barrier to cross-talk between bits. This polymer

photonic crystal has the potential to dramatically improve performance further through the improved capabilities to optimize the photochemical processes and more fully exploiting the periodic nature of the information domains in the image processing.

CC A4270J Optical polymers and other organic optical materials; A4280T Optical storage and retrieval; A4265G Optical transient phenomena, self-induced transparency, optical saturation and related effects; A4270Q Photonic bandgap materials; B4110 Optical materials; B4120 Optical storage and retrieval; B4340G Optical saturation and related effects

CT ANNEALING; NANOSTRUCTURED MATERIALS; OPTICAL MICROSCOPY; OPTICAL POLYMERS; OPTICAL SATURABLE ABSORPTION; OPTICAL STORAGE; PHOTONIC BAND GAP

ST polymeric nanostructured material; high-density 3D optical memory storage; polymer photonic crystal; core-shell latex particles; latex cores; optically active dye-labeled monomer; annealing; ***hexagonal*** *** close-packed structure*** ; two-photon laser scanning microscopy; photobleaching

ET D

L4 ANSWER 62 OF 95 INSPEC (C) 2006 IEE on STN

AN 2001:7030388 INSPEC DN A2001-20-4283-002; B2001-10-4145-027

TI Arbitrary-phase-modulated Talbot illuminator.

AU Changhe Zhou; Huaisheng Wang; Peng Xi; Shuai Zhao; Liren Liu (Inst. of Opt. & Fine Mech., Acad. Sinica, Shanghai, China)

SO Proceedings of the SPIE - The International Society for Optical Engineering (2000) vol.4114, p.140-5. 21 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/2000/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2000)4114L.140:APMT;1-Q
Conference: Photonic Devices and Algorithms for Computing II. San Diego, CA, USA, 2-3 Aug 2000
Sponsor(s): SPIE

DT Conference Article; Journal

TC Theoretical; Experimental

CY United States

LA English

AB An arbitrary-phase-modulated array illuminator (APM-AIL) based on the Talbot effect means that the arbitrary-phase-modulated phase plate may generate the specific intensity distribution at the specific fractional Talbot distance. The previous understanding is that only the specific phase modulated Talbot illuminator is possible for this purpose. We discus how the condition of APM-AIL can be fulfilled. We found that the APM-AIL is also a position-selective Talbot array illuminator, which is usually impossible to realize for the conventional Talbot illuminator. We have given a two-dimensional experimental example of the Talbot illuminator. We also present some of other experimental examples fabricated by binary-optics technology, e.g., nonseparable ***hexagonal*** illumination, random-intensity simulation of sky stars, optical square-beam transformation, and 1*3 beam splitting for readout of an ***optical*** ***disk*** .

CC A4283 Micro-optical devices and technology; A4280K Optical beam modulators; A4280H Optical beam splitters; A4285D Optical fabrication, surface grinding; A4280F Gratings, echelles; B4145 Micro-optical devices and technology; B4190 Other optical system components

CT DIFFRACTION GRATINGS; MICRO-OPTICS; OPTICAL ARRAYS; OPTICAL BEAM SPLITTERS; OPTICAL FABRICATION; OPTICAL MODULATION; PHASE MODULATION

ST arbitrary-phase-modulated Talbot illuminator; Talbot effect; arbitrary-phase-modulated array illuminator; arbitrary-phase-modulated phase plate; specific intensity distribution; specific fractional Talbot distance; specific phase modulated Talbot illuminator; position-selective Talbot array illuminator; conventional Talbot illuminator; two-dimensional experimental example; Talbot illuminator; fabrication; binary-optics technology; ***nonseparable hexagonal illumination*** ; random-intensity simulation; sky stars; optical square-beam transformation; 1*3 beam splitting; readout; ***optical disk*** ; phase-modulated Talbot illuminator

L4 ANSWER 63 OF 95 INSPEC (C) 2006 IEE on STN

AN 2001:7026748 INSPEC DN A2001-19-0130C-044

TI Light Scattering by Non-Spherical Particles. Fifth Conference.

SO Journal of Quantitative Spectroscopy and Radiative Transfer (15 Aug.-15 Sept. 2001) vol.70, no.4-6

Published by: Elsevier
Price: CCCC 01/$20.00
CODEN: JQSRAE ISSN: 0022-4073
Conference: Light Scattering by Non-Spherical Particles. Fifth Conference. Halifax, NS, Canada, 28 Aug-1 Sept 2000
DT Conference Proceedings; Journal
TC Experimental
CY United Kingdom
LA English
AB The following topics were dealt with: light scattering by optically soft randomly oriented spheroids; light scattering computational methods for particles on substrates; generalized multiparticle Mie solution; discrete sources method for light scattering analysis from 3D asymmetrical features on substrate; Mie scattering coefficients for multilayered particles with large size parameters; effective medium method for calculation of T matrix of aggregated spheres; scattering by randomly oriented thin ice disks with moderate equivalent-sphere size parameters; radiative properties of cirrus clouds in the IR spectral region; absorption and extinction properties of ***hexagonal*** ice columns and plates in random/preferred orientation, using exact T-matrix theory and aircraft observations of cirrus; statistical approach of roughness effects on polarization of light scattered by dust grains; opposition effect of icy solar system objects; light scattering intensity fluctuations in single aerosol particles during deliquescence; structure-induced polarization features in forward scattering from collections of cylindrical fibers; cloud phase identification from PICASSO-CENA lidar depolarization, multiple scattering sensitivity; light scattering properties of fractal aggregates: numerical calculations; nonspherical dust particle motion under electromagnetic radiation; scattering by inhomogeneous particles; microwave analog experiments-comparison to effective ***medium*** theories; ***laser*** trapping forces on nonspherical particles; microwave backscattering by nonspherical ice particles; T-matrix method for electromagnetic scattering from scatterers with complex structure; scattering properties of rutile pigments located eccentrically in microvoids; solar radiation absorption by charged water droplets; Mie scattering efficiency of large spherical particle embedded in absorbing medium; computer programs for light scattering by particles with inclusions; cirrus particle sizes, split-window technique; anomalous diffraction theory for randomly oriented nonspherical particles; light scattering from small features on surfaces; photon tunneling contributions to extinction for laboratory grown ***hexagonal*** columns; resonant light scattering between spherical and cylindrical dielectric hosts with metallic inclusion; shadowing effect in clusters of opaque spherical particles; radiation force caused by scattering, absorption, and emission of light by nonspherical particles; constraints on PSC particle microphysics derived from lidar observations.
CC A0130C Conference proceedings; A4225F Optical diffraction and scattering; A5170 Optical phenomena in gases; A7835 Brillouin and Rayleigh scattering; other light scattering (condensed matter)
CT LIGHT SCATTERING
ST light scattering; optically soft randomly oriented spheroids; particles; substrates; generalized multiparticle Mie solution; computational methods; discrete sources method; 3D asymmetrical features; substrate; Mie scattering coefficients; multilayered particle; large size parameters; effective medium method; aggregated spheres; randomly oriented thin ice disks; equivalent-sphere size parameters; radiative properties; cirrus clouds; IR spectral region; absorption properties; extinction properties; ***hexagonal ice columns*** ; plates; random/preferred orientation; T-matrix theory; aircraft observations; cirrus; statistical approach; roughness effects; light polarization; dust grains; opposition effect; icy solar system objects; intensity fluctuations; single aerosol particles; deliquescence; structure-induced polarization features; forward scattering; cylindrical fibers; cloud phase identification; PICASSO-CENA lidar depolarization; multiple scattering sensitivity; light scattering properties; fractal aggregate; nonspherical dust particle motion; electromagnetic radiation; inhomogeneous particles; microwave analog experiments; laser trapping forces; polar stratospheric clouds; microwave backscattering; nonspherical ice particles; T-matrix method; electromagnetic scattering; scatterers; complex structure; scattering properties; rutile pigments; microvoids; solar radiation absorption; charged water droplets; Mie scattering efficiency; large spherical particle; computer programs; absorbing medium; cirrus particle sizes;

split-window technique; anomalous diffraction theory; randomly oriented nonspherical particles; small surface features; photon tunneling contributions; ***hexagonal columns*** ; resonant light scattering; spherical dielectric hosts; cylindrical dielectric hosts; metallic inclusion; shadowing effect; opaque spherical particle clusters; radiation force; PSC particle microphysics; lidar observations
ET D; T

L4 ANSWER 64 OF 95 INSPEC (C) 2006 IEE on STN
AN 2001:7006992 INSPEC DN A2001-18-6220D-003
TI Elastic properties of beryllium-lanthanum hexaaluminate crystal, BeLaAl11O19.
AU Bogdanov, S.V.; Zubrinov, I.I. (Inst. of Laser Phys., Acad. of Sci., Novosibirsk, Russia); Pestryakov, E.V.; Petrov, V.V.; Semenov, V.I.; Alimpiev, A.I.
SO Crystallography Reports (May-June 2001) vol.46, no.3, p.450-5. 17 refs.
Published by: MAIK Nauka/Interperiodica Publishing
Price: CCCC 1063-7745/2001/4603-0450$21.00
CODEN: CYSTE3 ISSN: 1063-7745
SICI (Trl): 1063-7745(200105/06)46:3L.450:EPBL;1-S
Translation of: Kristallografiya (May-June 2001) vol.46, no.3, p.500-5. 17 refs.
CODEN: KRISAJ ISSN: 0023-4761
SICI: 0023-4761(200105/06)46:3L.500;1-X
DT Journal; Translation Abstracted
TC Experimental
CY Russian Federation; Russian Federation
LA English
AB The elastic properties of beryllium-lanthanum hexaaluminate, BeLaAl11O19 (sp. gr. P63/mmc), a new crystal from the family of ***hexagonal*** aluminates, have been studied. The velocities of elastic-wave propagation in the crystals are measured by a new acoustooptic interference method. The values of all the independent components of elastic-constant tensor are determined and used to calculate a number of dynamic parameters of the crystal such as the Young's and shear moduli, the modulus of volume elasticity, Poisson's ratio as well as the Debye temperature and specific heat. The data obtained are compared with the same parameters for the well-known magnesium-lanthanum hexaaluminate MgLaAl11O19 laser crystals. It is shown that the dynamic properties of the BeLaAl11O19 crystal are close to those of MgLaA11O19 and are a promising matrix for designing new ***laser*** ***media*** .
CC A6220D Elasticity, elastic constants; A6230 Mechanical and elastic waves; A6540 Heat capacities of solids; A6370 Statistical mechanics of lattice vibrations; A6150E Crystal symmetry; models and space groups, and crystalline systems and classes
CT BERYLLIUM COMPOUNDS; DEBYE TEMPERATURE; ELASTIC WAVES; LANTHANUM COMPOUNDS; POISSON RATIO; SPACE GROUPS; SPECIFIC HEAT; YOUNG'S MODULUS
ST elastic properties; BeLaAl11O19; elastic-wave propagation velocities; elastic-constant tensor; shear moduli; Young's moduli; Poisson's ratio; Debye temperature; specific heat
CHI BeLaAl11O19 ss, Al11 ss, O19 ss, Al ss, Be ss, La ss, O ss
ET Al*Be*La*O; Al sy 4; sy 4; Be sy 4; La sy 4; O sy 4; BeLaAl11O19; Be cp; cp; La cp; Al cp; O cp; P; Al*La*Mg*O; Mg sy 4; MgLaAl11O19; Mg cp; La*Mg; La sy 2; sy 2; Mg sy 2; MgLa; BeLaAl11O; Al; O; Be; La

L4 ANSWER 65 OF 95 INSPEC (C) 2006 IEE on STN
AN 2001:6966881 INSPEC DN A2001-15-6855-051; B2001-08-4190F-010
TI Crystallization of Ag-In-Sb-Te phase-change optical recording films.
AU Lih-Hsin Chou; Yem-Yeu Chang; Yeong-Cherng Chai; Shiunn-Yeong Wang (Dept. of Mater. Sci. & Eng., Nat. Tsing Hua Univ., Hsinchu, Taiwan)
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (May 2001) vol.40, no.5A, p.3375-6. 10 refs.
Published by: Japan Soc. Appl. Phys
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(200105)40:5AL.3375:CPCO;1-#
DT Journal
TC Experimental
CY Japan
LA English
AB Crystalline phases formed on thermally annealed and laser-annealed Ag12.4In3.8Sb55.2Te28.6 four-element alloy films were observed to be different. After 1 h isothermal annealing at temperatures between 190

degrees C and 450 degrees C, ***hexagonal*** Sb and chalcopyrite AgInTe2 phases were observed, whereas laser annealing by initialization at laser power higher than 2.86 mW/ mu m2 yielded cubic crystalline Sb and AgSbTe2 phases. There was only one exothermic peak at 170 degrees C determined by differential scanning calorimetry (DSC) measurement. Only the ***hexagonal*** Sb phase was observed by X-ray diffraction of samples subjected to DSC measurement. These experimental results suggest that the activation energy for crystallization derived from Kissinger's equation using DSC data may not be the same as that for crystallization during erasing of phase-change ***optical*** recording ***disks***
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CC A6855 Thin film growth, structure, and epitaxy; A6470K Solid-solid transitions; A4270G Light-sensitive materials; A4280X Optical coatings; A4280T Optical storage and retrieval; A6170A Annealing processes; A8140G Other heat and thermomechanical treatments; A8140T Optical properties (related to treatment conditions); A6180B Ultraviolet, visible and infrared radiation effects; A4262A Laser materials processing; B4190F Optical coatings and filters; B2520F Amorphous and glassy semiconductors; B4110 Optical materials; B4120 Optical storage and retrieval; B2550A Annealing processes in semiconductor technology; B4360B Laser materials processing

CT ANNEALING; ANTIMONY COMPOUNDS; CHALCOGENIDE GLASSES; CRYSTALLISATION; DIFFERENTIAL SCANNING CALORIMETRY; INDIUM COMPOUNDS; LASER BEAM ANNEALING; OPTICAL FILMS; OPTICAL STORAGE; PHASE EQUILIBRIUM; SEMICONDUCTOR THIN FILMS; SILVER COMPOUNDS; X-RAY DIFFRACTION

ST crystallization; Ag-In-Sb-Te phase-change optical recording films; crystalline phases; thermally annealed Ag12.4In3.8Sb55.2Te28.6 four-element alloy films; laser-annealed Ag12.4In3.8Sb55.2Te28.6 four-element alloy films; isothermal annealing; ***hexagonal Sb*** ; chalcopyrite AgInTe2 phases; laser annealing; cubic crystalline Sb; AgSbTe2 phases; exothermic peak; differential scanning calorimetry; DSC; X-ray diffraction; activation energy; erasing; 190 to 450 C; 170 C; Ag12.4In3.8Sb55.2Te28.6; Sb; AgSbTe2; AgInTe2

CHI Ag12.4In3.8Sb55.2Te28.6 ss, Ag12.4 ss, Sb55.2 ss, Te28.6 ss, In3.8 ss, Ag ss, In ss, Sb ss, Te ss; Sb el; AgSbTe2 ss, Te2 ss, Ag ss, Sb ss, Te ss; AgInTe2 ss, Te2 ss, Ag ss, In ss, Te ss

PHP temperature 4.63E+02 to 7.23E+02 K; temperature 4.43E+02 K

ET Ag*In*Sb*Te; Ag sy 4; sy 4; In sy 4; Sb sy 4; Te sy 4; Ag-In-Sb-Te; Ag12.4In3.8Sb55.2Te28.6; Ag cp; cp; In cp; Sb cp; Te cp; C; Sb; Ag*In*Te; Ag sy 3; sy 3; In sy 3; Te sy 3; AgInTe2; Ag*Sb*Te; Sb sy 3; AgSbTe2; Ag12.4In3.8Sb55.2Te; Ag; Te; In; AgSbTe; AgInTe

L4 ANSWER 66 OF 95 INSPEC (C) 2006 IEE on STN

AN 2001:6946503 INSPEC DN A2001-14-8750G-007; B2001-07-7510J-018

TI Compositional and morphological imaging of CO2 laser irradiated human teeth by low vacuum SEM, confocal laser scanning microscopy and atomic force microscopy.

AU Watari, F. (Dept. of Dental Mater. & Eng., Hokkaido Univ. Sch. of Dentistry, Sapporo, Japan)

SO Journal of Materials Science: Materials in Medicine (March 2001) vol.12, no.3, p.189-94. 11 refs.
Published by: Kluwer Academic Publishers
Price: CCCC 0957-4530/2001/$19.50
CODEN: JSMMEL ISSN: 0957-4530
SICI: 0957-4530(200103)12:3L.189:CMIL;1-D

DT Journal

TC Experimental

CY United States

LA English

AB Enamel and dentin of human teeth irradiated by CO2 laser were investigated by confocal laser scanning microscopy (CLSM), low vacuum scanning electron microscopy (WET-SEM) and atomic force microscopy (AFM). Optical tomographic imaging by CLSM, compositional imaging based on atomic number effect of reflected electrons by WET-SEM, high resolution observation of surface morphology by AFM were done for both the irradiated and nonirradiated area of the same specimen throughout. The crystals of about 50 mu m length and the bright spots were observed by CLSM at the bottom of the cavity induced by laser irradiation. They turned out from the observation by WET-SEM as the acicular crystals with the cross section of an irregularly ***hexagonal*** shape situated parallel and perpendicular, respectively, to the inner surface of the cavity. The thickness of the thermally deteriorated zone of the cavity was about 25 mu

m. The crystals unidirectionally grown up to the size of several hundreds nm were also observed by AFM, while the apatite crystallites of 50-150 nm were recognized all over in non-irradiated area. All the results suggest that after instantaneous melting at the surface of teeth by CO2 laser shot the crystals of calcium phosphate were recrystallized and grown to a large size. The compositional imaging in addition to morphological observation was useful to obtain the information of the change in materials induced by laser irradiation.

CC A8750G Biological effects of ionizing radiations (UV, X-ray, gamma-ray; particle radiation effects); A8750E Bio-optics (effects of microwaves, light, laser and other electromagnetic waves); A8770H Radiation therapy; A8770E Patient diagnostic methods and instrumentation; A8760F Optical and laser radiation (medical uses); B7510J Optical and laser radiation (biomedical imaging/measurement); B7520C Radiation therapy

CT ATOMIC FORCE MICROSCOPY; BIOLOGICAL EFFECTS OF LASER RADIATION; BIOMEDICAL IMAGING; DENTISTRY; ***LASER*** APPLICATIONS IN ***MEDICINE*** ; OPTICAL MICROSCOPY; OPTICAL TOMOGRAPHY; SCANNING ELECTRON MICROSCOPY

ST morphological imaging; CO2 laser irradiated human teeth; compositional imaging; atomic number effect; confocal laser scanning microscopy; atomic force microscopy; dentin; enamel; low vacuum scanning electron microscopy; reflected electrons; high resolution observation; surface morphology; irradiated area; nonirradiated area; bright spots; acicular crystals; cross section; ***irregularly hexagonal shape*** ; perpendicular; parallel; thermally deteriorated zone; cavity; apatite crystallites; instantaneous melting; Ca3PO4; optical tomographic imaging; CO2

CHI CO2 bin, O2 bin, C bin, O bin

ET C*O; CO2; C cp; cp; O cp; Ca*O*P; Ca3PO4; Ca cp; P cp; CO; O

L4 ANSWER 67 OF 95 INSPEC (C) 2006 IEE on STN

AN 2001:6926289 INSPEC DN A2001-12-4280T-020; B2001-06-4120-035; C2001-06-5320K-035

TI Study of oxygen-doped GeSbTe film and its effect as an interface layer on the recording properties in the blue wavelength.

AU Tae Hee Jeong; Hun Seo; Kwang Lyul Lee; Sung Min Choi (Devices & Mater. Lab., LG Electron. Inst. of Technol., Seoul, South Korea); Sang Jun Kim; Sang Youl Kim

SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (March 2001) vol.40, no.3B, p.1609-12. 13 refs.
Published by: Japan Soc. Appl. Phys
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(200103)40:3BL.1609:SODG;1-O
Conference: 10th International Symposium on Optical Memory 2000 (ISOM 2000). Hokkaido, Japan, 5-8 Sept 2000
Sponsor(s): Japan Soc. Appl. Phys.; Magnetics Soc. Japan; Optoelectron. Ind. & Technol. Dev. Assoc

DT Conference Article; Journal

TC Experimental

CY Japan

LA English

AB An oxygen-doped GeSbTe interface layer improves the overwriting characteristics of the phase-change ***optical*** ***disk*** in the blue wavelength. The thermal and optical properties of oxygen-doped GeSbTe film and its crystal structure were investigated. Crystallization temperature and activation energy of the amorphous Ge-Sb-Te-O films are increased with the oxygen concentration while the melting point is decreased. The refractive index of the crystalline state monotonically increases with the oxygen concentration of the film, while its extinction coefficient monotonically decreases. In terms of the crystalline structure, fcc characteristic peaks disappear gradually with oxygen concentration, and above 35 at.% of oxygen, ***hexagonal*** peaks appear.

CC A4280T Optical storage and retrieval; A4280X Optical coatings; A6160 Crystal structure of specific inorganic compounds; A6470K Solid-solid transitions; A8130H Constant-composition solid-solid phase transformations: polymorphic, massive, and order-disorder; A6500 Thermal properties of condensed matter; B4120 Optical storage and retrieval; B4190F Optical coatings and filters; C5320K Optical storage

CT ANTIMONY ALLOYS; CRYSTAL STRUCTURE; GERMANIUM ALLOYS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; OXYGEN; SOLID-STATE PHASE TRANSFORMATIONS; TERBIUM ALLOYS; THERMAL PROPERTIES

ST oxygen-doped GeSbTe film; interface layer; recording properties; blue wavelength; oxygen-doped GeSbTe interface layer; overwriting

characteristics; ***phase-change optical disk*** ; optical properties; thermal properties; crystal structure; crystallization temperature; activation energy; amorphous Ge-Sb-Te-O films; oxygen concentration; melting point; refractive index; crystalline state; extinction coefficient; crystalline structure; fcc characteristic peaks; ***hexagonal peaks*** ; Ge-Sb-Te-O

CHI GeSbTeO ss, Ge ss, Sb ss, Te ss, O ss

ET Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; GeSbTe; Ge cp; cp; Sb cp; Te cp; Ge*O*Sb*Te; Ge sy 4; sy 4; O sy 4; Sb sy 4; Te sy 4; Ge-Sb-Te-O; GeSbTeO; O cp; Ge; Sb; Te; O

L4 ANSWER 68 OF 95 INSPEC (C) 2006 IEE on STN

AN 2001:6852672 INSPEC DN A2001-07-7847-003

TI Coherent phonons in amorphous and crystalline Ge2Sb2Te5 films.

AU Forst, M.; Winkler, O.; Laurenzis, M.; Trappe, C.; Dekorsy, T.; Kurz, H.; Wagner, V.; Geurts, J.; Bechevet, B. (Inst. fur Halbleitertechnik II, Tech. Hochschule Aachen, Germany)

SO Quantum Electronics and Laser Science Conference (QELS 2000). Technical Digest. Postconference Edition. TOPS Vol.40 (IEEE Cat. No.00CH37089) Salem, MA, USA: Opt. Soc. America, 2000. p.53 of 318 pp. 5 refs.
Conference: San Francisco, CA, USA, 7-12 May 2000
Sponsor(s): APS/Div. Laser Sci.; IEEE/Lasers & Electro-Opt. Soc.; Opt. Soc. America
ISBN: 1-55752-608-7

DT Conference Article

TC Experimental

CY United States

LA English

AB Summary form only given. Reversible phase change materials such as compounds of the pseudo-binary GeTe-Sb2Te3 system are applicable as high-density ***optical*** data storage ***media*** based on the relatively high difference in the reflection coefficients of the amorphous and the crystalline states. Although this principle is already employed in commercial DVD disks, the physics of the phase transitions is not fully understood. Previous investigations on the structure of Ge2Sb2Te by X-ray diffraction revealed a phase transition from the amorphous to a metastable crystalline cubic phase at approximately 140 degrees C and a further structural transition into a ***hexagonal*** phase near 260 degrees C. We investigate the structural properties of Ge2Sb2Te, by means of coherent phonon spectroscopy. The distinct phase transitions are monitored by changes of the phonon signatures detected in femtosecond time-resolved experiments at different sample temperatures.

CC A7847 Ultrafast optical measurements in condensed matter; A6855 Thin film growth, structure, and epitaxy; A7865M Optical properties of amorphous and glassy semiconductors and insulators (thin films/low-dimensional structures); A7865P Optical properties of other inorganic semiconductors and insulators (thin films/low-dimensional structures); A6320 Phonons and vibrations in crystal lattices

CT AMORPHOUS SEMICONDUCTORS; ANTIMONY COMPOUNDS; CRYSTALLISATION; GERMANIUM COMPOUNDS; OPTICAL MATERIALS; PHONON SPECTRA; SEMICONDUCTOR THIN FILMS; SOLID-STATE PHASE TRANSFORMATIONS; TIME RESOLVED SPECTRA; X-RAY DIFFRACTION

ST Ge2Sb2Te5 films; crystalline films; amorphous films; coherent phonons; reversible phase change material; pseudo-binary GeTe-Sb2Te3 system; ***high-density optical data storage media*** ; reflection coefficients; amorphous state; commercial DVD disks; phase transitions; structure; X-ray diffraction; phase transition; amorphous phase; metastable crystalline cubic phase; structural transition; ***hexagonal phase*** ; structural properties; coherent phonon spectroscopy; distinct phase transitions; phonon signatures; femtosecond time-resolved experiments; sample temperatures; 140 C; 260 C; Ge2Sb2Te5; GeTe-Sb2Te3

CHI Ge2Sb2Te5 ss, Ge2 ss, Sb2 ss, Te5 ss, Ge ss, Sb ss, Te ss; GeTeSb2Te3 ss, Sb2 ss, Te3 ss, Ge ss, Sb ss, Te ss

PHP temperature 4.13E+02 K; temperature 5.33E+02 K

ET Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge2Sb2Te5; Ge cp; cp; Sb cp; Te cp; GeTe; Sb2Te3; GeTe-Sb2Te3; Ge2Sb2Te; C; Ge; Sb; Te; GeTeSb2Te

L4 ANSWER 69 OF 95 INSPEC (C) 2006 IEE on STN

AN 2000:6748962 INSPEC DN A2000-23-4230-018; B2000-12-6135-150; C2000-12-1250M-041

TI Adaptive image transmission with a pattern forming system.

AU Schwab, M.; Denz, C. (Inst. fur Angewandte Phys., Tech. Hochschule

Darmstadt, Germany)
SO Conference Digest. 2000 International Quantum Electronics Conference (Cat. No.00TH8504)
Piscataway, NJ, USA: IEEE, 2000. p.1 pp. of xii+242 pp. 2 refs.
Conference: Nice, France, 10-15 Sept 2000
Sponsor(s): Eur. Phys. Soc./IEEE/Lasers & Electro-Opt. Soc.; Opt. Soc. American; Quantum Electron. & Opt. Division
Price: CCCC 0 7803 6318 3/2000/$10.00
ISBN: 0-7803-6318-3
DT Conference Article
TC Theoretical; Experimental
CY United States
LA English
AB Photorefractive materials are well-suited for pattern observation since their intrinsically slow dynamics offers the opportunity to perform real-time measurements and observations. A single-feedback configuration creating two counterpropagating beams in the nonlinear ***optical*** ***medium*** gives rise to transverse modulational instability above a certain threshold. This instability generally leads to the formation of ***hexagonal*** patterns. In the case of the photorefractive feedback system, patterns of non- ***hexagonal*** geometry can be excited by changing the distance between the crystal and the feedback mirror. In addition, the powerful tool of spatial filtering can be applied to manipulate the system in a way that e.g. non- ***hexagonal*** patterns become dominant in a parameter region where the hexagon is the natural output of the system. From the point of view of all-optical image processing, this phenomenon can be interpreted as a distribution of a laser beam into an adaptive number of spots with the same intensity. Thus, switches from one to six, four or two channels can be realized. Taking into account higher order terms, other possible configurations of distributing channels are accessible. Our aim is to investigate the prospects of transmitting an image into these self-organized channels. We present experimental results for image transmission of simple geometric figures into the spatial sidebands, proving the principle function of our adaptive image processing system.
CC A4230D Theory of optical information and image processing; A4230V Image processing and restoration; A4265M Multiwave mixing; A4265T Optical chaos and related effects; B6135 Optical, image and video signal processing; B4340F Optical phase conjugation and multiwave mixing; C1250M Image recognition
CT IMAGE PROCESSING; OPTICAL CHAOS; OPTICAL INFORMATION PROCESSING; PHOTOREFRACTIVE MATERIALS; SPATIAL FILTERS
ST adaptive image transmission; pattern forming system; photorefractive materials; periodic spatial patterns; single-feedback configuration; counterpropagating beams; transverse modulational instability; nonhexagonal patterns; spatial filtering; all-optical image processing; adaptive number of spots; higher order terms; self-organized channels; simple geometric figures; spatial sidebands

L4 ANSWER 70 OF 95 INSPEC (C) 2006 IEE on STN
AN 2000:6611142 INSPEC DN A2000-14-6855-013
TI Crystal structure and microstructure of nitrogen-doped Ge2Sb2Te5 thin film.
AU Tae Hee Jeong; Myong R. Kim; Hun Seo; Jeong Woo Park; Cheong Yeon (Devices & Mater. Lab., LG Corp. Inst. of Technol., Seoul, South Korea)
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (May 2000) vol.39, no.5A, p.2775-9. 8 refs.
Published by: Publication Office, Japanese Journal Appl. Phys
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(200005)39:5AL.2775:CSMN;1-R
DT Journal
TC Experimental
CY Japan
LA English
AB Ge2Sb2Te5 thin film is a promising candidate for recording material of phase-change ***optical*** ***disks*** , and nitrogen is doped into this film to increase overwrite characteristics. In this study, the crystal structure and the microstructure of nitrogen-doped Ge2Sb2Te5 thin film were investigated. In the annealed nitrogen-doped thin film, the characteristic face-centered cubic peaks on the X-ray diffraction pattern were broadened and shifted to a smaller angle with the increase of nitrogen content. In addition, a remarkably reduced grain size and a

highly strained structure are seen in the transmission electron microscopy image. Doped nitrogen in Ge2Sb2Te5 thin film plays two roles. One is to distort the crystal lattice and induce a strain field in the film. The other is to refine the grain size of the film through precipitation. The crystal lattice is transformed from face-centered cubic to a ***hexagonal*** structure in nitrogen content above 20 at.%.

CC A6855 Thin film growth, structure, and epitaxy; A4280T Optical storage and retrieval; A4280X Optical coatings; A6480G Microstructure

CT CRYSTAL MICROSTRUCTURE; CRYSTAL STRUCTURE; GERMANIUM COMPOUNDS; GRAIN SIZE; NITROGEN; OPTICAL FILMS; OPTICAL STORAGE; PRECIPITATION; SEMICONDUCTOR THIN FILMS; TRANSMISSION ELECTRON MICROSCOPY

ST crystal structure; microstructure; nitrogen-doped Ge2Sb2Te5 thin film; recording material; ***phase-change optical disks*** ; overwrite characteristics; face-centered cubic peaks; X-ray diffraction pattern; nitrogen content; grain size; highly strained structure; transmission electron microscopy image; strain field; precipitation; ***hexagonal*** *** structure*** ; Ge2Sb2Te5:N

CHI Ge2Sb2Te5:N ss, Ge2Sb2Te5 ss, Ge2 ss, Sb2 ss, Te5 ss, Ge ss, Sb ss, Te ss, N ss, N el, N dop

ET Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge2Sb2Te5; Ge cp; cp; Sb cp; Te cp; Ge*N*Sb*Te; Ge sy 4; sy 4; N sy 4; Sb sy 4; Te sy 4; Ge2Sb2Te5:N; N doping; doped materials; Ge2Sb2Te; N; Ge; Sb; Te

L4 ANSWER 71 OF 95 INSPEC (C) 2006 IEE on STN

AN 2000:6610353 INSPEC DN A2000-14-4265C-001; B2000-07-4340F-005

TI Multiple Stokes and anti-Stokes generation in triclinic gamma -KIO3 and ***hexagonal*** alpha -LiIO3 nonlinear crystals.

AU Kaminskii, A.A. (Inst. of Crystallography, Acad. of Sci., Moscow, Russia); Eichler, H.J.; Hulliger, J.; Haussuhl, S.; Chyba, T.; Temple, D.; Barnes, J.C.; Dolbinina, V.N.; Findeisen, J.; Wang Jiyang; Lu Menkai

SO Laser Physics (March-April 2000) vol.10, no.2, p.627-32. 15 refs.
Published by: MAIK Nauka/Interperiodica Publishing
CODEN: LAPHEJ ISSN: 1054-660X
SICI: 1054-660X(200003/04)10:2L.627:MSAS;1-Z

DT Journal

TC Experimental

CY Russian Federation

LA English

AB Efficient stimulated Raman scattering (SRS) in triclinic gamma -KIO3 and ***hexagonal*** alpha -LiIO3 crystals was observed under picosecond laser excitation. All scattering components were identified and connected with the SRS-active vibration modes of these iodates. We classify the gamma -KIO3 and a-LiIO3 acentric compounds as promising (chi (2)+ chi (3)) ***media*** for Raman ***laser*** shifters.

CC A4265C Stimulated Raman scattering and spectra; CARS; stimulated Brillouin and stimulated Rayleigh scattering and spectra; A4270Y Other optical materials; A6320D Phonon states and bands, normal modes, and phonon dispersion; A4255R Lasing action in other solids; A4265M Multiwave mixing; B4340F Optical phase conjugation and multiwave mixing; B4320G Solid lasers; B4110 Optical materials

CT LITHIUM COMPOUNDS; MULTIWAVE MIXING; NONLINEAR OPTICAL SUSCEPTIBILITY; OPTICAL MATERIALS; POTASSIUM COMPOUNDS; RAMAN LASERS; SOLID LASERS; STIMULATED RAMAN SCATTERING; VIBRATIONAL MODES

ST multiple anti-Stokes generation; multiple Stokes generation; triclinic nonlinear crystals; ***hexagonal nonlinear crystals*** ; gamma -KIO3; alpha -LiIO3; stimulated Raman scattering; picosecond laser excitation; scattering components; SRS-active vibration modes; acentric compounds; chi (2)+ chi (3) media; Raman laser shifters; KIO3; LiIO3

CHI KIO3 ss, IO3 ss, O3 ss, I ss, K ss, O ss; LiIO3 ss, IO3 ss, Li ss, O3 ss, I ss, O ss

ET I*K*O; KIO3; K cp; cp; I cp; O cp; I*Li*O; LiIO3; Li cp; O; I; LiIO; Li

L4 ANSWER 72 OF 95 INSPEC (C) 2006 IEE on STN

AN 2000:6485743 INSPEC DN A2000-05-4265J-008

TI Nonlinear light beam propagation in uniaxial crystals: nonlinear refractive index, self-trapping and self-focusing.

AU Qi Guo (Inst. of Quantum Electron., South China Normal Univ., Guangzhou, China); Sien Chi

SO Journal of Optics A: Pure and Applied Optics (Jan. 2000) vol.2, no.1, p.5-15. 21 refs.
Doc. No.: S1464-4258(00)03717-X
Published by: IOP Publishing

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CODEN: JOAOF8 ISSN: 1464-4258
SICI: 1464-4258(200001)2:1L.5:NLBP;1-9
DT Journal
TC Theoretical
CY United Kingdom
LA English
AB We derive the nonlinear paraxial wave equation for the propagation of an ***optical*** beam in nonlinear anisotropic ***media*** with centrosymmetry. As an application of the equation, we obtain the nonlinear refractive index (NRI) in three uniaxial crystals belonging to the symmetry classes 6/mmm of the ***hexagonal*** system, 4/mmm of the tetragonal system, and 3m of the trigonal system, respectively, and consider the self-trapping and self-focusing of the beam propagating in any direction in these crystals. We conclude that NRI, critical power and self-focusing length are all anisotropic (dependent upon the propagation direction) for an extraordinary light but isotropic for an ordinary light, and that there exists an elliptical self-trapping beam for the extraordinary light.
CC A4265J Beam trapping, self focusing, thermal blooming, and related effects; A7820D Optical constants and parameters (condensed matter); A4225B Optical propagation, transmission and absorption
CT ANISOTROPIC MEDIA; CRYSTAL SYMMETRY; LIGHT PROPAGATION; OPTICAL SELF-FOCUSING; REFRACTIVE INDEX
ST nonlinear light beam propagation; uniaxial crystals; nonlinear refractive index; self-trapping; self-focusing; nonlinear paraxial wave equation; nonlinear anisotropic media; centrosymmetry; symmetry classes; 6/mmm symmetry; ***hexagonal system*** ; 4/mmm symmetry; tetragonal system; 3m symmetry; trigonal system; critical power; self-focusing length; extraordinary light; elliptical self-trapping beam

L4 ANSWER 73 OF 95 INSPEC (C) 2006 IEE on STN
AN 1999:6399852 INSPEC DN A1999-24-0130C-011
TI Light Scattering by Nonspherical Particles'98.
SO Journal of Quantitative Spectroscopy and Radiative Transfer (Sept.-Dec. 1999) vol.63, no.2-6
Published by: Elsevier
Price: CCCC 99/$20.00
CODEN: JQSRAE ISSN: 0022-4073
Conference: Light Scattering by Nonspherical Particles'98. New York, NY, USA, 29 Sept-1 Oct 1998
Sponsor(s): NASA; American Meteorol. Soc.; American Geophys. Union; OSA
DT Conference Proceedings; Journal
CY United Kingdom
LA English
AB The following topics were dealt with: electromagnetic scattering by systems of randomly oriented spheroids; aggregated particles; T-matrix approach for randomly oriented, nonabsorbing, nonspherical Chebyshev particles; projection schemes in the null field method; expansion coefficients for spheroidal functions; light scattering by axisymmetric particles; EM scattering by tilted infinite circular multilayer cylinder; single-expansion EBCM calculations for osculating spheres; variational boundary condition method; separation of variables method; spheroidal coated particles in random orientation; light scattering by Gaussian particles: Rayleigh ellipsoid approximation; Stokes parameters for light scattering from Faraday-active sphere; light absorption by soot particles in water micro-droplets; catastrophe optics of spheroidal drops and generalized rainbows; light scattering indicatrix extrema of homogeneous spheroid; radiative transfer in oriented spheroidal particle layer; enhanced backscatter from monodisperse contaminants; optically thick media radiative characteristics; bidirectional reflectance; polarisation fluctuation structure; shadow-hiding effect in inhomogeneous layered particulate ***media*** ; spheroidal particle heating by intense ***laser*** radiation; electrooptic effects in dilute suspensions of bacterial cells and fractal aggregates; of extinction and scattering spectra of large spheroidal Au particles in glass matrix; cirrus cloud top-of-atmosphere radiance IR spectra; optical properties of ***hexagonal*** columns: complex angular momentum theory; horizontally oriented ice crystals in cirrus clouds; microwave radiative transfer calculations; satellite retrievals of ice-cloud properties; radiowave scattering by melting ice particles: eccentric spheres model; polarimetric scattering simulation of tree canopy in SAR imaging at C band; particle

non-sphericity effects on satellite monitoring of drifting volcanic ash clouds; interplanetary and cometary dust clouds; Gaussian randomly oscillating raindrops; Mars aerosol optical thickness measurements; radar parameters simulation for populations of spherical and non-spherical hydrometeors; IR emission of laboratory ice clouds; anomalous diffraction theory for arbitrarily oriented ***hexagonal*** crystals.

CC A0130C Conference proceedings; A4225F Optical diffraction and scattering; A5170 Optical phenomena in gases; A4225G Edge and boundary effects; optical reflection and refraction; A7820D Optical constants and parameters (condensed matter); A4110H Electromagnetic waves: theory; A4755K Multiphase flows; A9265M Atmospheric optical scattering, polarization

CT ATMOSPHERIC OPTICS; DISPERSE SYSTEMS; DROPS; ELECTROMAGNETIC WAVE SCATTERING; LIGHT SCATTERING; PARTICLE SIZE; REFRACTIVE INDEX

ST electromagnetic scattering; randomly oriented spheroids; aggregated particles; T-matrix; randomly oriented nonabsorbing nonspherical Chebyshev particles; projection schemes; null field method; expansion coefficients; spheroidal functions; light scattering; axisymmetric particles; EM scattering; tilted infinite circular multilayer cylinder; single-expansion EBCM calculations; osculating spheres; variational boundary condition method; separation of variables method; spheroidal coated particles; random orientation; Gaussian particles; Rayleigh ellipsoid approximation; Stokes parameters; Faraday-active sphere; light absorption; soot particles; water micro-droplets; catastrophe optics; spheroidal drops; generalized rainbows; light scattering indicatrix extrema; homogeneous spheroid; radiative transfer; oriented spheroidal particle layer; enhanced backscatter; monodisperse contaminants; optically thick media radiative characteristics; bidirectional reflectance; polarisation fluctuation structure; shadow-hiding effect; inhomogeneous layered particulate media; spheroidal particle heating; intense laser radiation; electrooptic effects; dilute suspensions; bacterial cells; fractal aggregates; extinction; scattering spectra; large spheroidal Au particles; glass matrix; top-of-atmosphere radiance IR spectra; optical properties; ***hexagonal columns*** ; complex angular momentum theory; horizontally oriented ice crystals; cirrus clouds; microwave radiative transfer calculations; satellite retrievals; ice-cloud properties; radiowave scattering; melting ice particles; eccentric spheres model; polarimetric scattering simulation; tree canopy; SAR imaging; C band; particle nonsphericity effects; satellite monitoring; drifting volcanic ash clouds; interplanetary dust clouds; cometary dust clouds; Gaussian randomly oscillating raindrops; Mars aerosol optical thickness measurements; radar parameters simulation; populations; spherical hydrometeors; nonspherical hydrometeors; IR emission; laboratory ice clouds; anomalous diffraction theory; ***arbitrarily oriented hexagonal crystals***

ET T; Au; C

L4 ANSWER 74 OF 95 INSPEC (C) 2006 IEE on STN

AN 1999:6317021 INSPEC DN A1999-18-7865E-002; B1999-09-3120B-009

TI Magneto-optical properties of chromium-alloyed manganese bismuth thin films.

AU Bandaru, P.R.; Sands, T.D. (Dept. of Mater. Sci. & Miner. Eng., California Univ., Berkeley, CA, USA); Weller, D.; Marinero, E.E.

SO Journal of Applied Physics (1 Aug. 1999) vol.86, no.3, p.1596-603. 38 refs.
Doc. No.: S0021-8979(99)04515-6
Published by: AIP
Price: CCCC 0021-8979/99/86(3)/1596(8)/$15.00
CODEN: JAPIAU ISSN: 0021-8979
SICI: 0021-8979(19990801)86:3L.1596:MOPC;1-F

DT Journal

TC Experimental

CY United States

LA English

AB MnBi thin films have been considered for short-wavelength rewritable ***optical*** recording ***media*** due to the very large magneto-optic Kerr rotation and perpendicular anisotropy (Ku) of the ***hexagonal*** magnetic low-temperature MnBi phase. However, coincident structural and magnetic transformations near the Curie temperature (360 degrees C) result in poor thermal cycling behavior, preventing the application of MnBi as rewritable media. We have previously hypothesized that the substitution of Cr for Mn would reduce the ferromagnetic coupling along the c axis, thereby lowering the Curie temperature and possibly decoupling the magnetic and structural transitions. Preliminary

experimental data reported earlier [P.R. Bandaru et al., Appl. Phys. Lett. 72, 2337 (1998)] supported this hypothesis. In this article, the effects of Cr substitution are further explored and the feasibility of Mn1-xCrxBi (0<x<0.15) films for magneto-optical recording applications analyzed. It is shown that 5% Cr is sufficient for decoupling the phase transitions with no significant loss in the magneto-optic figure of merit. Transmission electron microscopy studies indicate a small grain size (50 nm) for the Cr-alloyed films, which could be beneficial for reducing media noise.

CC A7865E Optical properties of metals and metallic alloys (thin films/low-dimensional structures); A7570A Magnetic properties of monolayers and overlayers; A7820L Magneto-optical effects (condensed matter); A7530K Magnetic phase boundaries; A6470K Solid-solid transitions; A8130H Constant-composition solid-solid phase transformations: polymorphic, massive, and order-disorder; A7550S Magnetic recording materials; A7530G Magnetic anisotropy; B3120B Magnetic recording; B4120 Optical storage and retrieval

CT BISMUTH ALLOYS; CHROMIUM ALLOYS; CURIE TEMPERATURE; KERR MAGNETO-OPTICAL EFFECT; MAGNETIC RECORDING NOISE; MAGNETIC THIN FILMS; MAGNETIC TRANSITIONS; MAGNETO-OPTICAL RECORDING; MANGANESE ALLOYS; METALLIC THIN FILMS; PERPENDICULAR MAGNETIC ANISOTROPY; SOLID-STATE PHASE TRANSFORMATIONS; TRANSMISSION ELECTRON MICROSCOPY

ST thin films; magneto-optic Kerr rotation; perpendicular anisotropy; magnetic transformations; Curie temperature; thermal cycling; ***rewritable optical recording media*** ; ferromagnetic coupling; Cr substitution; magneto-optical recording; magneto-optic figure of merit; transmission electron microscopy; grain size; media noise; CrMnBi

CHI CrMnBi ss, Bi ss, Cr ss, Mn ss

ET Bi*Mn; Bi sy 2; sy 2; Mn sy 2; MnBi; Mn cp; cp; Bi cp; C; Cr; Mn; Bi*Cr*Mn; Bi sy 3; sy 3; Cr sy 3; Mn sy 3; Mn1-xCrxBi; Cr cp; CrMnBi; Bi

L4 ANSWER 75 OF 95 INSPEC (C) 2006 IEE on STN

AN 1999:6302666 INSPEC DN A1999-17-4265J-003; B1999-09-4340J-003

TI Transverse spatial laser beam patterns spontaneously formed in the feedback system with a liquid crystal.

AU Young-Shin Park; Young-Chul Noh; Won-Kyu Lee; Jin-Ho Jeon; Jai-Hyung Lee; Joon-Sung Chang (Dept. of Phys., Seoul Nat. Univ., South Korea)

SO Journal of the Optical Society of Korea (March 1999) vol.3, no.1, p.15-19. 12 refs.
Published by: Opt. Soc. Korea
CODEN: JOSKFI ISSN: 1226-4776
SICI: 1226-4776(199903)3:1L.15:TSLB;1-1

DT Journal

TC Theoretical; Experimental

CY Korea, Democratic People's Republic of

LA English

AB The formation of spontaneous transverse optical patterns was investigated in a single feedback mirror system using nematic liquid crystals as nonlinear ***optical*** ***media*** . By varying the size of an input beam and the feedback distance, we obtained various interesting transverse optical patterns as well as the ***hexagonal*** patterns which are predicted theoretically assuming plane wave input. We can explain theoretically these characteristics of various patterns by introducing a ratio of the beam half width and spatial wavelength of the patterns. We have observed that as this ratio increased, the number of spots constituting the patterns also increased. Finally the patterns evolved into the successive hexagon in the transverse plane.

CC A4265J Beam trapping, self focusing, thermal blooming, and related effects; A6130 Liquid crystals; A4280A Optical lenses and mirrors; A4260H Laser beam characteristics and interactions; A4265T Optical chaos and related effects; B4340J Optical self-focusing and related effects; B4330 Laser beam interactions and properties

CT LASER BEAMS; MIRRORS; NEMATIC LIQUID CRYSTALS; NONLINEAR MEDIA; OPTICAL FEEDBACK; OPTICAL KERR EFFECT; OPTICAL SELF-FOCUSING

ST transverse spatial laser beam patterns; feedback system; liquid crystal; spontaneous transverse optical patterns; single feedback mirror system; nematic liquid crystals; ***nonlinear optical media*** ; input beam; feedback distance; transverse optical patterns; ***hexagonal patterns*** ; plane wave input; beam half width; spatial wavelength; hexagon

L4 ANSWER 76 OF 95 INSPEC (C) 2006 IEE on STN

AN 1999:6247391 INSPEC DN A1999-12-4280T-016; B1999-06-4120-030;

C1999-06-5320K-025
TI Kinetic crystallization behavior of phase-change medium.
AU Donyau Chiang; Tzuan-Reng Jeng; Der-Ray Huang (Opto-Electron. & Syst. Lab., Ind. Technol. Res. Inst., Hsinchu, Taiwan); Yung-Yuan Chang; Chung-Ping Liu
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (March 1999) vol.38, no.3B, p.1649-51. 9 refs.
Published by: Publication Office, Japanese Journal Appl. Phys
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(199903)38:3BL.1649:KCBP;1-Q
Conference: Optical Memories. Tsukuba, Japan, 20-22 Oct 1998
DT Conference Article; Journal
TC Practical; Experimental
CY Japan
LA English
AB The crystallization behavior of nominal-composition GeSb2Te4 films prepared by rf-magnetron sputtering are examined. The crystal structures of the as-sputtered and the annealed films at different annealing temperatures are identified by the X-ray diffraction (XRD) method. Two phase transformations occur in the conventional slow heating process when the as-sputtered film is heat-treated from the ambient temperature to its melting point. However, only the amorphous to face-centered cubic (FCC) transformation is allowed when laser annealing with a 1011 degrees C/min heating rate is applied to heat the films. Consequently, we predict that the metastable FCC phase, instead of the ***hexagonal*** closed-packed (HCP) phase, is the dominant crystalline phase in the GeSb2Te4 phase-change recording medium.
CC A4280T Optical storage and retrieval; A6470K Solid-solid transitions; A8115C Deposition by sputtering; A6170A Annealing processes; A6110 X-ray determination of structures; A4280X Optical coatings; B4120 Optical storage and retrieval; B0520B Sputter deposition; B4190F Optical coatings and filters; C5320K Optical storage
CT ANTIMONY ALLOYS; CRYSTALLISATION; GERMANIUM ALLOYS; LASER BEAM ANNEALING; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; SOLID-STATE PHASE TRANSFORMATIONS; SPUTTER DEPOSITION; TERBIUM ALLOYS; X-RAY DIFFRACTION
ST kinetic crystallization behavior; phase-change medium; nominal-composition GeSb2Te4 films; rf-magnetron sputtering; crystal structures; as-sputtered films; annealed films; annealing temperatures; X-ray diffraction; phase transformations; slow heating process; ambient temperature; melting point; amorphous to face-centered cubic transformation; laser annealing; metastable FCC phase; ***hexagonal closed-packed phase*** ; GeSb2Te4 phase-change recording medium; GeSb2Te4
CHI GeSb2Te4 int, Sb2 int, Te4 int, Ge int, Sb int, Te int, GeSb2Te4 ss, Sb2 ss, Te4 ss, Ge ss, Sb ss, Te ss
ET Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; GeSb2Te4; Ge cp; cp; Sb cp; Te cp; GeSb2Te; Sb; Te; Ge

L4 ANSWER 77 OF 95 INSPEC (C) 2006 IEE on STN
AN 1999:6228280 INSPEC DN A1999-11-4255P-006; B1999-06-4320J-008
TI Photonic bandgap ***disk*** ***laser*** .
AU Lee, R.K.; Painter, O.J.; Kitzke, B.; Scherer, A.; Yariv, A. (Dept. of Appl. Phys. & Electr. Eng., California Inst. of Technol., Pasadena, CA, USA)
SO Electronics Letters (1 April 1999) vol.35, no.7, p.569-70. 6 refs.
Published by: IEE
Price: CCCC 0013-5194/99/$10.00
CODEN: ELLEAK ISSN: 0013-5194
SICI: 0013-5194(19990401)35:7L.569:PBDL;1-8
DT Journal
TC Experimental
CY United Kingdom
LA English
AB A two-dimensional photonic crystal defined ***hexagonal*** ***disk*** ***laser*** which relies on Bragg reflection rather than the total internal reflection as in traditional microdisk lasers is described. The devices are fabricated using a selective etch to form free standing membranes suspended in air. Room temperature lasing at 1650 nm for a 150 nm thick, 15 mu m wide cavity fabricated in InP/InGaAsP is demonstrated with pulsed optical pumping.
CC A4255P Lasing action in semiconductors; A4260D Laser resonators and cavities; A4270Q Photonic bandgap materials; B4320J Semiconductor lasers; B4320L Laser resonators and cavities

CT GALLIUM ARSENIDE; III-V SEMICONDUCTORS; INDIUM COMPOUNDS; MICRODISC LASERS; PHOTONIC BAND GAP; SEMICONDUCTOR LASERS
ST ***photonic bandgap disk laser*** ; two-dimensional photonic crystal; Bragg reflection; microdisk laser; selective etching; free standing membrane; pulsed optical pumping; 1650 nm; InP-InGaAsP
CHI InP-InGaAsP int, InGaAsP int, InP int, As int, Ga int, In int, P int, InGaAsP ss, As ss, Ga ss, In ss, P ss, InP bin, In bin, P bin
PHP wavelength 1.65E-06 m
ET In*P; InP; In cp; cp; P cp; As*Ga*In*P; As sy 4; sy 4; Ga sy 4; In sy 4; P sy 4; InGaAsP; Ga cp; As cp; V; InP-InGaAsP; As; Ga; In; P

L4 ANSWER 78 OF 95 INSPEC (C) 2006 FIZ KARLSRUHE on STN
AN 1999:6217970 INSPEC DN A1999-10-7570K-006
TI Magnetization distribution in magneto- ***optical*** ***medium*** on patterned substrate.
AU Safonov, V.L.; Suzuki, T. (Inf. Storage Mater. Lab., Toyota Technol. Inst., Nagoya, Japan)
SO Journal of Magnetism and Magnetic Materials (March 1999) vol.192, no.3, p.523-8. 9 refs.
Doc. No.: S0304-8853(98)00607-6
Published by: Elsevier
CODEN: JMMMDC ISSN: 0304-8853
SICI: 0304-8853(199903)192:3L.523:MDMO;1-T
DT Journal
TC Theoretical
CY Netherlands
LA English
AB A micromagnetic calculation of magnetization in a ferromagnetic thin film with a perpendicular magnetic anisotropy fabricated on a patterned substrate is carried out. The domain wall energy of pinning of domain walls between up and down magnetized domains is shown to be determined by geometry of substrate. Estimations of regions of stability of two different domain structures in the ***hexagonal*** lattice of circle patches are given.
CC A7570K Domain structure in magnetic films (magnetic bubbles); A7530G Magnetic anisotropy; A7550S Magnetic recording materials; A7560C Magnetic domain walls and domain structure; A7560E Magnetization curves, hysteresis, Barkhausen and related effects; A7540M Numerical simulation studies of magnetic materials; A7820L Magneto-optical effects (condensed matter)
CT FERROMAGNETISM; MAGNETIC DOMAIN WALLS; MAGNETIC THIN FILMS; MAGNETO-OPTICAL RECORDING; PERPENDICULAR MAGNETIC ANISOTROPY
ST ***magneto-optical medium*** ; patterned substrate; micromagnetic calculation; ferromagnetic thin film; perpendicular magnetic anisotropy; domain wall energy; ***hexagonal lattice*** ; domain structures; magnetization distribution

L4 ANSWER 79 OF 95 INSPEC (C) 2006 IEE on STN
AN 1998:5944926 INSPEC DN C9807-7320-098
TI Reaction-diffusion computer: massively parallel chemical computations.
AU Adamatzky, A. (St. Petersburg State Univ., Russia)
SO Parcella '96. Proceedings of the VII. International Workshop on Parallel Processing by Cellular Automata and Arrays
Editor(s): Vollmar, R.; Erhard, W.; Jossifov, V.
Berlin, Germany: Akademie Verlag, 1996. p.287-90 of 341 pp. 15 refs.
Conference: Berlin, Germany, 16-20 Sept 1996
ISBN: 3-05-501750-1
DT Conference Article
TC Theoretical
CY Germany, Federal Republic of
LA English
AB The unpredictable advance in experiments in nanotechnology and molecular computing fields of science permit us to discuss substantially algorithmic aspects of designing and programming of molecular or chemical processors. 'Typical' massively parallel chemical processor is an array of chemical reactors (microvolumes) populated in the nodes of rectangular or ***hexagonal*** lattice. Every reactor is connected diffusively with closest neighboring reactors. Computation is programmed by the choosing of reagents and defining of reaction equations between reagents, data are loaded via application of reagents onto the determined sites of computing ***media*** and results are fixed by ***optical*** devices. The most appropriate mathematical model of massively parallel molecular processor

are cellular automata and the optimal problems to solve in these media belong to the computational geometry.
CC C7320 Physics and chemistry computing; C4220 Automata theory; C5220P Parallel architecture
CT CELLULAR AUTOMATA; CHEMISTRY COMPUTING; PARALLEL ARCHITECTURES
ST massively parallel chemical computations; reaction-diffusion computer; nanotechnology; molecular computing; massively parallel chemical processor; cellular automata; computational geometry; reagents; reaction equations

L4 ANSWER 80 OF 95 INSPEC (C) 2006 IEE on STN
AN 1998:5895498 INSPEC DN A9811-4265M-001
TI ***Hexagonal*** optical structures in photorefractive crystals with a feedback mirror.
AU Lushnikov, P.M. (L.D. Landau Inst. for Theor. Phys., Acad. of Sci., Moscow, Russia)
SO Journal of Experimental and Theoretical Physics (March 1998) vol.86, no.3, p.614-27. 19 refs.
Doc. No.: S1063-7761(98)02903-5
Published by: AIP
Price: CCCC 1063-7761/98/030614-14$15.00
CODEN: JTPHES ISSN: 1063-7761
SICI (Trl): 1063-7761(199803)86:3L.614:HOSP;1-F
Translation of: Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki (March 1998) vol.113, no.3, p.1122-46. 19 refs.
CODEN: ZETFA7 ISSN: 0044-4510
SICI: 0044-4510(199803)113:3L.1122;1-U
DT Journal; Translation Abstracted
TC Theoretical
CY Russian Federation; United States
LA English
AB A nonlinear theory is presented for the formation of ***hexagonal*** ***optical*** structures in a photorefractive ***medium*** equipped with a feedback mirror. Oppositely directed beams in photorefractive crystals are unstable against the excitation of sideband waves. It is shown here that as this instability evolves to its nonlinear stage, the three-wave interaction between weak sideband beams does not stabilize it, but rather leads to explosive growth of the amplitudes of beams whose transverse wave vectors form angles that are multiples of pi /3. As a result, sideband beams at these angles are found to be correlated. A range of parameters is found in which four-wave interactions saturate the explosive instability, which explains the appearance of stable hexagons in the experiment. Outside this region, nonlinearities of higher order saturate the explosive instability, and the process of hexagon generation must be studied numerically. Matrix elements are obtained for the three- and four-wave interactions as functions of the distance to the feedback mirror, and an equation for the time evolution of the sideband wave amplitudes is derived that describes the hexagon generation. A comparison is made with experimental results for the photorefractive crystals KNbO3 and BaTiO3.
CC A4265M Multiwave mixing; A4278 Optical lens and mirror systems; A4270G Light-sensitive materials
CT BARIUM COMPOUNDS; MIRRORS; MULTIWAVE MIXING; OPTICAL FEEDBACK; PHOTOREFRACTIVE MATERIALS; POTASSIUM COMPOUNDS
ST ***hexagonal optical structures*** ; photorefractive crystals; feedback mirrors; nonlinear theory; counterpropagating beams instability; lateral waves; three-wave interaction; transverse wave vectors; four-wave interactions; stable hexagons; matrix elements; time evolution; KNbO3; BaTiO3
CHI KNbO3 ss, NbO3 ss, Nb ss, O3 ss, K ss, O ss; BaTiO3 ss, TiO3 ss, Ba ss, O3 ss, Ti ss, O ss
ET K*Nb*O; K sy 3; sy 3; Nb sy 3; O sy 3; KNbO3; K cp; cp; Nb cp; O cp; Ba*O*Ti; Ba sy 3; Ti sy 3; BaTiO3; Ba cp; Ti cp; KNbO; Nb*O; NbO; Nb; O; BaTiO; O*Ti; TiO; Ba; Ti

L4 ANSWER 81 OF 95 INSPEC (C) 2006 IEE on STN
AN 1997:5733948 INSPEC DN A9723-6250-008
TI High-resolution analytical electron microscopy of boron nitrides laser heated at high pressure.
AU Golberg, D.; Bando, Y.; Eremets, M.; Kurashima, K.; Tamiya, T.; Takemura, K.; Yusa, H. (Nat. Inst. for Res. in Inorg. Mater., Ibaraki, Japan)
SO Journal of Electron Microscopy (1997) vol.46, no.4, p.281-92. 33 refs.

Published by: Oxford University Press
CODEN: JELJA7 ISSN: 0022-0744
SICI: 0022-0744(1997)46:4L.281:HRAE;1-Z

DT Journal
TC Experimental
CY United Kingdom
LA English
AB High-resolution transmission electron microscopy and electron energy loss spectroscopy have been carried out for cubic and ***hexagonal*** boron nitrides (BN) ***laser*** heated in argon or nitrogen ***media*** at pressures of 5-11 GPa in a diamond anvil cell. In particular, recrystallized products of irradiation from a fluid phase in the form of tiny flakes have been investigated. The observations revealed perfect crystallinity (either of cubic or ***hexagonal*** BN) in flakes recrystallized from the fluid and traces of melting in the bulk. Multi-shelled circular and polygonal BN nanotubes, which did not contain any additional inclusions, were found after laser heating of cubic and ***hexagonal*** BN in nitrogen. The nanotubes typically exhibited 3-10 shells, a characteristic inner dimension in cross-section of 2-6 nm and stoichiometry of B/N 1. They were found to have grown either from a cubic BN matrix or from a mixture of amorphous+turbostratic+ ***hexagonal*** BN, which had recrystallized on the specimens' surface from the fluid phase.
CC A6250 High-pressure and shock-wave effects in solids; A6480G Microstructure; A6180M Channelling, blocking and energy loss of particles; A7920K Other electron-surface impact phenomena; A6180B Ultraviolet, visible and infrared radiation effects; A8140G Other heat and thermomechanical treatments; A6480E Stoichiometry and homogeneity
CT BORON COMPOUNDS; ELECTRON ENERGY LOSS SPECTRA; HIGH-PRESSURE EFFECTS; LASER BEAM ANNEALING; NANOSTRUCTURED MATERIALS; RECRYSTALLISATION; STOICHIOMETRY; TRANSMISSION ELECTRON MICROSCOPY
ST high-resolution analytical electron microscopy; high-resolution transmission electron microscopy; electron energy loss spectroscopy; ***hexagonal BN*** ; cubic BN; diamond anvil cell; recrystallized products; perfect crystallinity; flakes; multi-shelled circular BN nanotubes; multi-shelled polygonal BN nanotubes; laser heating; characteristic inner dimension; cross-section; stoichiometry; cubic BN matrix; fluid phase; Ar media; N2 media; 5 to 11 GPa; BN; N2; Ar
CHI BN bin, B bin, N bin; N2 el, N el; Ar el
PHP pressure 5.0E+09 to 1.1E+10 Pa
ET B*N; BN; B cp; cp; N cp; Ar; N2; N

L4 ANSWER 82 OF 95 INSPEC (C) 2006 IEE on STN
AN 1997:5546322 INSPEC DN A9710-7865-003
TI Infrared ellipsometry on ***hexagonal*** and cubic boron nitride thin films.
AU Franke, E.; Neumann, H. (Inst. of Surface Modification, Leipzig, Germany); Schubert, M.; Tiwald, T.E.; Woollam, J.A.; Hahn, J.
SO Applied Physics Letters (31 March 1997) vol.70, no.13, p.1668-70. 15 refs.
Doc. No.: S0003-6951(97)03813-8
Published by: AIP
Price: CCCC 0003-6951/97/70(13)/1668/3/$10.00
CODEN: APPLAB ISSN: 0003-6951
SICI: 0003-6951(19970331)70:13L.1668:IEHC;1-U
DT Journal
TC Experimental
CY United States
LA English
AB Infrared spectroscopic ellipsometry (IRSE) over the wavelength range from 700 to 3000 cm-1 has been used to study and distinguish the microstructure of polycrystalline ***hexagonal*** and cubic boron nitride thin films deposited by magnetron sputtering onto (100) silicon. The IRSE data are sensitive to the thin-film layer structure, phase composition, and average grain c-axes orientations of the ***hexagonal*** phase. We determine the amount of cubic material in high cubic boron nitride content thin films from the infrared ***optical*** dielectric function using an effective ***medium*** approach.
CC A7865J Optical properties of nonmetallic thin films; A7830G Infrared and Raman spectra in inorganic crystals; A7820D Optical constants and parameters; A6480G Microstructure; A6855 Thin film growth, structure, and epitaxy; A7145G Exchange, correlation, dielectric and magnetic functions, plasmons

CT BORON COMPOUNDS; CRYSTAL MICROSTRUCTURE; DIELECTRIC FUNCTION; ELLIPSOMETRY; III-V SEMICONDUCTORS; INFRARED SPECTRA; SEMICONDUCTOR THIN FILMS; SPUTTERED COATINGS
ST infrared ellipsometry; microstructure; polycrystalline films; magnetron sputtering; (100) Si substrate; cubic phase; ***hexagonal phase*** ; thin-film layer structure; phase composition; average grain c-axes orientations; infrared optical dielectric function; effective medium approach; 700 to 3000 cm-1; BN; Si
CHI BN bin, B bin, N bin; Si sur, Si el
PHP wavelength 3.3E-06 to 1.4E-05 m
ET V; Si; B*N; BN; B cp; cp; N cp

L4 ANSWER 83 OF 95 INSPEC (C) 2006 IEE on STN
AN 1996:5392420 INSPEC DN A9622-4265-004; B9611-4340-095
TI Multiple scale ***hexagonal*** patterns.
AU Mamaev, A.V.; Saffman, M. (Inst. of Problems in Mech., Acad. of Sci., Moscow, Russia)
SO QELS '96. Summaries of Papers Presented at the Quantum Electronics and Laser Science Conference. Vol.10 1996 Technical Digest Series. Conference Edition (IEEE Cat. No.96CH35902)
Washington, DC, USA: Opt. Soc. America, 1996. p.129 of v+256 pp. 0 refs.
Conference: Anaheim, CA, USA, 2-7 June 1996
Sponsor(s): Opt. Soc. America; IEEE/Lasers & Electro-Opt. Soc.; Div. Laser Sci. APS; Quantum Electron. Div. Eur. Phys. Soc.; Japanese Quantum Eletron. Joint Group
ISBN: 0-7803-3190-7
DT Conference Article
TC Theoretical; Experimental
CY United States
LA English
AB Summary form only given. ***Hexagonal*** optical patterns appear as a result of a transverse instability of counterpropagating ***laser*** beams in a nonlinear ***medium*** . When the nonlinear ***medium*** is placed in an ***optical*** cavity that provides feedback, additional resonances come into play. By use of the polished end faces of the nonlinear medium, here a 5-mm-long photorefractive crystal of KNbO3, as a weakly reflecting Fabry-Ferot cavity new spatial scales corresponding to cavity resonances are selected.
CC A4265 Nonlinear optics; A4270G Light-sensitive materials; A4260H Laser beam characteristics and interactions; B4340 Nonlinear optics and devices; B4110 Optical materials; B4330 Laser beam interactions and properties
CT FABRY-PEROT RESONATORS; LASER BEAMS; LASER FEEDBACK; LASER STABILITY; NONLINEAR OPTICS; PHOTOREFRACTIVE MATERIALS; POTASSIUM COMPOUNDS; REFLECTIVITY
ST ***multiple scale hexagonal patterns*** ; transverse instability; counterpropagating laser beams; nonlinear medium; optical cavity; feedback; polished end faces; photorefractive crystal; KNbO3; weakly reflecting Fabry-Ferot cavity; spatial scales; cavity resonances; 5 mm
CHI KNbO3 ss, NbO3 ss, Nb ss, O3 ss, K ss, O ss
PHP size 5.0E-03 m
ET K*Nb*O; K sy 3; sy 3; Nb sy 3; O sy 3; KNbO3; K cp; cp; Nb cp; O cp; KNbO; Nb*O; NbO; Nb; O

L4 ANSWER 84 OF 95 INSPEC (C) 2006 FIZ KARLSRUHE on STN
AN 1996:5344391 INSPEC DN A9618-4265-014; B9609-4340-136
TI ***Hexagonal*** ***optical*** patterns in anisotropic non-linear ***media*** .
AU Mamaev, A.V.; Saffman, M. (Opt. & Fluid Dynamics Lab., Riso Nat. Lab., Roskilde, Denmark)
SO Europhysics Letters (20 June 1996) vol.34, no.9, p.669-74. 16 refs.
Published by: Eur. Phys. Soc
CODEN: EULEEJ ISSN: 0295-5075
SICI: 0295-5075(19960620)34:9L.669:HOPA;1-H
DT Journal
TC Experimental
CY Switzerland
LA English
AB We present experimental observations of ***hexagonal*** patterns in strongly anisotropic non-linear ***optical*** ***media*** . Close to threshold rolls are observed. As the non-linearity is increased a transition from rolls to hexagons, leading finally to a pure ***hexagonal*** state, is observed. A mean-field model, in agreement

with experiments, shows that the anisotropy locks the far-field orientation of the hexagons, while leaving their rotational symmetry undisturbed.

CC A4265 Nonlinear optics; A7820W Other optical properties of bulk materials; B4340 Nonlinear optics and devices

CT NONLINEAR OPTICS; OPTICAL MODULATION; PHOTOREFRACTIVE EFFECT

ST ***hexagonal optical patterns*** ; anisotropic nonlinear media; mean field model; far field orientation; rotational symmetry; laser beams; photorefractive effects

L4 ANSWER 85 OF 95 INSPEC (C) 2006 IEE on STN

AN 1996:5196441 INSPEC DN A9607-8760-004; B9604-7510B-049; C9604-7330-071

TI Detection and complement of ***hexagonal*** borders in corneal endothelial cell image.

AU Mahzoun, M.R.; Okazaei, K. (Dept. of Electr. & Electron. Eng., Fukui Univ., Japan); Mitsumoto, H.; Kawai, H.; Sato, Y.; Tamura, S.; Kani, K.

SO Medical Imaging Technology (Jan. 1996) vol.14, no.1, p.56-69. 8 refs.
Published by: Japanese Soc. Med. Imaging Technol
CODEN: MITEET ISSN: 0288-450X
SICI: 0288-450X(199601)14:1L.56:DCHB;1-G

DT Journal

TC Practical

CY Japan

LA English

AB The authors present a 2-step processing method for contour extraction and completion for hexagons. The first step is based on the combination of a Laplacian Gaussian filter (LGF) and shape dependent filters. An edge detection method for low contrast and noisy images which contain hexagons is proposed. To detect the hexagon edges, especially in the corners, the authors use an algorithm which has 6 masks as its detectors. Two tricorn filters are used to detect the tricorn joints of hexagons, while other 4 masks enhance the line segments of hexagon edges. As a natural image, the authors select a corneal endothelial cell (CEC) image which usually has regular ***hexagonal*** form. Measuring the shape of CEC automatically is important for clinical diagnosis. To evaluate the method's efficiency, the proposed algorithm and other conventional methods are applied to a group of noisy hexagons. Then the signal to noise ratio, coincidence ratio and accuracy factor of the results are compared. These comparisons and the good detection results of CEC from its noisy and low contrast image show the proposed algorithm's robustness against noise and a better detection ability compared with other methods. At the second step the authors complete the lacking part of the thinned image by using an energy minimum algorithm. Then the areas and distribution of cells are computed which can give necessary ***information*** for ***medical*** diagnosis.

CC A8760 Medical and biomedical uses of fields, radiations, and radioactivity; health physics; A8770E Patient diagnostic methods and instrumentation; A8725 Cellular biophysics; A8732 Physiological optics, vision; B7510B Radiation and radioactivity applications in biomedicine; B6140C Optical information, image and video signal processing; C7330 Biology and medical computing; C5260B Computer vision and image processing techniques

CT CELLULAR BIOPHYSICS; EDGE DETECTION; EYE; MEDICAL IMAGE PROCESSING

ST ***hexagonal borders detection*** ; corneal endothelial cell image; ***hexagonal borders complement*** ; clinical diagnosis; noise ratio; coincidence ratio; accuracy factor; noisy low contrast image; tricorn joints detection; cells distribution; cell areas; medical diagnosis; thinned image; energy minimum algorithm

L4 ANSWER 86 OF 95 INSPEC (C) 2006 IEE on STN

AN 1995:5053831 INSPEC DN A9520-6855-110; B9511-4110-002

TI The structure and crystallization characteristics of phase change ***optical*** ***disk*** material Ge1Sb2Te4.

AU Mao, Z.L. (Amorphous Res. Lab., Beijing Univ. of Aeronaut. & Astronaut., China); Chen, H.; Jung, A.-L.

SO Journal of Applied Physics (15 Aug. 1995) vol.78, no.4, p.2338-42. 11 refs.
Price: CCCC 0021-8979/95/78(4)/2338/5/$6.00
CODEN: JAPIAU ISSN: 0021-8979

DT Journal

TC Experimental

CY United States

LA English
AB The crystallization characteristics of amorphous Ge1Sb2Te4 thin films were studied by means of time-resolved transition measurements. It was found that a metastable phase appeared at the first stage of the crystallization process and then the metastable phase was transformed into a stable crystalline phase at higher annealing temperatures. The X-ray diffraction and transmission electron microscopy results indicated the metastable phase was identified as a face-centered-cubic structure and the stable crystalline phase corresponded to a ***hexagonal*** structure. Our experimental results show that the Ge1Sb2Te4 materials are applicable for phase change erasable optical storage.
CC A6855 Thin film growth, structure, and epitaxy; A6150C Physics of crystal growth; A8140G Other heat and thermomechanical treatments; A8140T Optical properties (related to treatment conditions); A4270G Light-sensitive materials; B4110 Optical materials; B4120 Optical storage and retrieval
CT ANNEALING; ANTIMONY COMPOUNDS; CRYSTAL STRUCTURE; CRYSTALLISATION; GERMANIUM COMPOUNDS; NONCRYSTALLINE STRUCTURE; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; TRANSMISSION ELECTRON MICROSCOPY
ST structure; crystallization characteristics; ***phase change optical disk*** *** material*** ; Ge1Sb2Te4; amorphous Ge1Sb2Te4 thin films; time-resolved transition measurements; metastable phase; stable crystalline phase; annealing temperatures; X-ray diffraction; transmission electron microscopy; face-centered-cubic structure; ***hexagonal structure*** ; phase change erasable optical storage
CHI Ge1Sb2Te4 ss, Ge1 ss, Sb2 ss, Te4 ss, Ge ss, Sb ss, Te ss
ET Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge1Sb2Te4; Ge cp; cp; Sb cp; Te cp; Ge1Sb2Te; Ge; Sb; Te

L4 ANSWER 87 OF 95 INSPEC (C) 2006 IEE on STN
AN 1995:4866010 INSPEC DN B9503-4120-006
TI ***Disk*** noise of quadrilayer MnBi magneto- ***optical*** ***disks*** .
AU Nakada, M.; Okada, M. (Functional Devices Res. Labs., NEC Corp., Kawasaki, Japan)
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers & Short Notes) (Dec. 1994) vol.33, no.12A, p.6577-81. 9 refs.
CODEN: JAPNDE ISSN: 0021-4922
DT Journal
TC Practical; Experimental
CY Japan
LA English
AB ***Disk*** noise of quadrilayer MnBi magneto- ***optical*** ***disks*** with grooved glass substrates was investigated. Both reflectivity noise and polarization noise of MnBi disks were 20 dB higher than those of TbFeCo disks. The degree of c-axis orientation of a ***hexagonal*** MnBi layer, which is inversely proportional to fluctuation in the magnetization direction, and Mn oxide in a MnBi layer are not dominant origins of the high disk noise. Bi layers 20 nm in thickness on grooved substrates have many hillocks over 50 nm in height at land edges. Noise reduction of 10 dB can be achieved by using a flat glass substrate. Surface roughness on the Bi layers is one of the main causes of high disk noise of MnBi disks.
CC B4120 Optical storage and retrieval; B3120B Magnetic recording; B4160 Magneto-optical devices
CT BISMUTH ALLOYS; MAGNETIC DISC STORAGE; MAGNETIC RECORDING NOISE; MAGNETO-OPTICAL RECORDING; MANGANESE ALLOYS
ST ***quadrilayer MnBi magneto-optical disks*** ; disk noise; reflectivity noise; polarization noise; magnetization direction; surface roughness; 20 dB; 20 nm; MnBi
CHI MnBi int, Bi int, Mn int, MnBi bin, Bi bin, Mn bin
PHP noise figure 2.0E+01 dB; size 2.0E-08 m
ET Bi*Mn; Bi sy 2; sy 2; Mn sy 2; MnBi; Mn cp; cp; Bi cp; B; Co*Fe*Tb; Co sy 3; sy 3; Fe sy 3; Tb sy 3; TbFeCo; Tb cp; Fe cp; Co cp; Mn; Bi

L4 ANSWER 88 OF 95 INSPEC (C) 2006 IEE on STN
AN 1995:4860894 INSPEC DN A9504-8115N-001; B9503-0520-001
TI Low temperature crystal growth of MnBi films.
AU Nakada, M.; Okada, M. (Functional Devices Res. Labs., NEC Corp., Kawasaki, Japan)
SO IEEE Transactions on Magnetics (Nov. 1994) vol.30, no.6, pt.1, p.4431-3. 5 refs.
Price: CCCC 0018-9464/94/$4.00

CODEN: IEMGAQ ISSN: 0018-9464
Conference: Sixth Joint Magnetism and Magnetic Materials - International Magnetics Conference. Albuquerque, NM, USA, 20-23 June 1994
Sponsor(s): IEEE
DT Conference Article; Journal
TC Experimental
CY United States
LA English
AB The relation between deposition conditions of Bi and Mn layers and crystal growth of MnBi were investigated to reduce the MnBi annealing temperature for its application to a magneto- ***optical*** ***disk*** . We found that higher c-axis orientation of the ***hexagonal*** Bi layer and lower Mn oxide concentration in the Mn layer reduces the annealing temperature. Growth of MnBi below 150 degrees C, which is much lower than the decomposition temperature of photo-polymer (about 200 degrees C), was achieved by optimizing deposition conditions of Bi and Mn layers.
CC A8115N Thin film growth from solid phases; A6822 Surface diffusion, segregation and interfacial compound formation; A8140G Other heat and thermomechanical treatments; B0520 Thin film growth
CT ANNEALING; BISMUTH; BISMUTH ALLOYS; CRYSTAL GROWTH; MAGNETIC THIN FILMS; MANGANESE; MANGANESE ALLOYS
ST low temperature crystal growth; MnBi films; deposition conditions; MnBi annealing temperature; ***magneto-optical disk*** ; c-axis orientation; ***hexagonal Bi layer*** ; Mn oxide concentration; Mn layer; annealing temperature; decomposition temperature; photo-polymer; 150 to 200 C; MnBi; Mn-Bi
CHI MnBi bin, Bi bin, Mn bin; Mn-Bi int, Bi int, Mn int, Bi el, Mn el
PHP temperature 4.23E+02 to 4.73E+02 K
ET Bi*Mn; Bi sy 2; sy 2; Mn sy 2; MnBi; Mn cp; cp; Bi cp; Bi; Mn; C; Mn-Bi

L4 ANSWER 89 OF 95 INSPEC (C) 2006 IEE on STN
AN 1991:3934467 INSPEC DN A91097195
TI Spontaneous hexagon formation in a nonlinear ***optical*** ***medium*** with feedback mirror.
AU D'Alessandro, G.; Firth, W.J. (Dept. of Phys., Strathclyde Univ., Glasgow, UK)
SO Physical Review Letters (20 May 1991) vol.66, no.20, p.2597-600. 10 refs.
CODEN: PRLTAO ISSN: 0031-9007
DT Journal
TC Theoretical
CY United States
LA English
AB The authors present two-dimensional numerical simulations of a nonlinear optical system made of a thin slice of Kerr material and a feedback mirror. The phase modulation induced on the light by the nonlinear material is transformed into amplitude modulation by propagation to the mirror and back, thus forming a feedback loop. Their simulations show that the uniform plane-wave solution deforms for sufficient pump intensity into a nonuniform pattern of ***hexagonal*** symmetry, independently of the sign of the nonlinearity, a feature which may be generic for third-order nonlinear optical systems.
CC A4265J Beam trapping, self focusing, thermal blooming, and related effects
CT AMPLITUDE MODULATION; MIRRORS; OPTICAL KERR EFFECT; OPTICAL MODULATION; PHASE MODULATION
ST nonlinear optical systems; spontaneous hexagon formation; feedback mirror; two-dimensional numerical simulations; Kerr material; phase modulation; amplitude modulation; feedback loop; uniform plane-wave solution; pump intensity; ***hexagonal symmetry***

L4 ANSWER 90 OF 95 INSPEC (C) 2006 IEE on STN
AN 1990:3724964 INSPEC DN A90133271
TI Simulation of magnetization reversal dynamics on the Connection Machine.
AU Mansuripur, M. (Optical Sci. Center, Arizona Univ., Tucson, AZ, USA); Giles, R.
SO Journal of Applied Physics (1 May 1990) vol.67, no.9, pt.2B, p.5555. 1 refs.
Price: CCCC 0021-8979/90/095555-01$03.00
CODEN: JAPIAU ISSN: 0021-8979
Conference: Thirty-Fourth Annual Conference on Magnetism and Magnetic Materials. Boston, MA, USA, 28 Nov-1 Dec 1989
Sponsor(s): AIP; IEEE
DT Conference Article; Journal

TC Theoretical
CY United States
LA English
AB Summary form only given, as follows. Magnetization reversal processes in thin magnetic films have been simulated on the Connection Machine (CM). The massive parallelism of the CM allows large lattices of dipoles to interact while following the dynamic equation of Landau-Lifshitz and Gilbert toward equilibrium. The two-dimensional ***hexagonal*** lattice consists of 256*256 dipoles with local uniaxial anisotropy, nearest-neighbor Heisenberg exchange, and long-range dipole-dipole demagnetizing interactions. The demagnetizing field has been computed with the fast Fourier transform technique which is particularly suited for the CM environment. Two sets of material parameters are considered in these studies. The first set is representative of amorphous rare earth-transition metal (RE-TM) alloys, which are currently of interest for their application as the ***media*** of erasable ***optical*** data storage. The second set corresponds to polycrystalline cobalt alloys (such as CoCr and CoPt), which are high-quality materials for in-plane magnetic recording applications. The discrete models of the RE-TM films have a cell size of approximately 10 AA, accommodating the narrow wall width of these media. In contrast, the cell size for CoCr-type media is typically 500 AA, which is their average crystallite size. The authors present simulation results that show domain nucleation and growth processes during magnetization reversal. Hysteresis loops and torque curves have also been computed by simulation, and they show the close agreement between these results and those of experiments. Complex magnetic ripple structures are observed in CoCr-type media when random axis anisotropy competes with demagnetization. Some of the more interesting features of these simulation ripples are described.
CC A7570A Magnetic properties of monolayers and overlayers; A7560E Magnetization curves, hysteresis, Barkhausen and related effects; A7530G Anisotropy; A7530E Exchange and superexchange interactions; A7560C Domain walls and domain structure; A7540M Numerical simulation studies; A7525 Spin arrangements in magnetically ordered materials (neutron studies, etc.); A7570K Domain structure (magnetic bubbles)
CT COBALT ALLOYS; DEMAGNETISATION; DIGITAL SIMULATION; EXCHANGE INTERACTIONS (ELECTRON); MAGNETIC ANISOTROPY; MAGNETIC DOMAIN WALLS; MAGNETIC DOMAINS; MAGNETIC HYSTERESIS; MAGNETIC STRUCTURE; MAGNETIC THIN FILMS; MAGNETISATION REVERSAL; RARE EARTH ALLOYS; SPIN DYNAMICS; TRANSITION METAL ALLOYS
ST amorphous rare earth-transition metal alloys; polycrystalline Co alloys; hysteresis loops; magnetization reversal dynamics; Connection Machine; thin magnetic films; dynamic equation; ***two-dimensional hexagonal*** *** lattice*** ; local uniaxial anisotropy; nearest-neighbor Heisenberg exchange; long-range dipole-dipole demagnetizing interactions; demagnetizing field; fast Fourier transform technique; discrete models; cell size; narrow wall width; average crystallite size; domain nucleation; growth processes; torque curves; magnetic ripple structures; CoCr-type media; random axis anisotropy; simulation; CoCr; CoPt
CHI CoCr bin, Co bin, Cr bin; CoPt bin, Co bin, Pt bin
ET Co*Cr; Co sy 2; sy 2; Cr sy 2; CoCr; Co cp; cp; Cr cp; Co*Pt; Pt sy 2; CoPt; Pt cp; Co; Cr; Pt

L4 ANSWER 91 OF 95 INSPEC (C) 2006 IEE on STN
AN 1990:3631706 INSPEC DN A90075863
TI The properties of Al,Si-doped MnBi films.
AU Wang, Y.J. (Inst. of Phys., Chinese Acad. of Sci., Beijing, China)
SO Journal of Magnetism and Magnetic Materials (Feb. 1990) vol.84, no.1-2, p.39-46. 34 refs.
Price: CCCC 0304-8853/90/$03.50
CODEN: JMMMDC ISSN: 0304-8853
DT Journal
TC Experimental
CY Netherlands
LA English
AB After suitable doping of Al,Si into MnBi, the doped film possesses ***hexagonal*** crystal structure with NiAs type and perpendicular anisotropy. Its maximum intrinsic Kerr rotation theta K approaches 2.04 degrees . The observation of TEM shows that the crystalline size of this film is about 0.04 mu m on a average. Meantime, it has good thermal stability. As a result, it is a promising material for the magneto- ***optical*** ***disc*** use. Moreover, the reason for the huge

enhancement of the Kerr effect is discussed.
CC A7570A Magnetic properties of monolayers and overlayers; A7820L Magneto-optical effects; A7865E Metals; A6155H Alloys; A7530G Anisotropy; A6855 Thin film growth, structure, and epitaxy
CT ALUMINIUM ALLOYS; BISMUTH ALLOYS; CRYSTAL ATOMIC STRUCTURE OF ALLOYS; KERR MAGNETO-OPTICAL EFFECT; MAGNETIC ANISOTROPY; MAGNETIC THIN FILMS; MANGANESE ALLOYS; SILICON ALLOYS; TRANSMISSION ELECTRON MICROSCOPE EXAMINATION OF MATERIALS
ST doped film; ***hexagonal crystal structure*** ; perpendicular anisotropy; intrinsic Kerr rotation; TEM; crystalline size; thermal stability; MnBi:Al,Si; Mn1.0Bi0.8Al0.5Si2.5
CHI MnBi:Al,Si ss, Al ss, Bi ss, Mn ss, Si ss, MnBi bin, Bi bin, Mn bin, Al el, Si el, Al dop, Si dop; Mn1.0Bi0.8Al0.5Si2.5 ss, Al0.5 ss, Bi0.8 ss, Mn1.0 ss, Si2.5 ss, Al ss, Bi ss, Mn ss, Si ss
ET Al; Si; Bi*Mn; Bi sy 2; sy 2; Mn sy 2; MnBi; Mn cp; cp; Bi cp; As*Ni; As sy 2; Ni sy 2; NiAs; Ni cp; As cp; Al*Bi*Mn; Al sy 3; sy 3; Bi sy 3; Mn sy 3; MnBi:Al; Al doping; doped materials; Al*Bi*Mn*Si; Al sy 4; sy 4; Bi sy 4; Mn sy 4; Si sy 4; Mn1.0Bi0.8Al0.5Si2.5; Al cp; Si cp; Bi; Mn; Mn1.0Bi0.8Al0.5Si

L4 ANSWER 92 OF 95 INSPEC (C) 2006 IEE on STN
AN 1990:3514290 INSPEC DN A90011615
TI Neutral hydrogen in the M96 group: the galaxies and the intergalactic ring.
AU Schneider, S.E. (Dept. of Phys. & Astron., Massachusetts Univ., Amherst, MA, USA)
SO Astrophysical Journal (1 Aug. 1989) vol.343, no.1, pt.1, p.94-106. 58 refs.
CODEN: ASJOAB ISSN: 0004-637X
DT Journal
TC Experimental
CY United States
LA English
AB The M96 group is examined at 21 cm to study the galaxies' neutral hydrogen content and to search for evidence of interactions that might help explain the origin of the large intergalactic H I feature found there. M96, an Sab spiral, has 90% of its H I concentrated outside of the central bright ***optical*** ***disk*** -possibly captured intergalactic gas. The ringlike distribution of the intergalactic gas may, in turn, be shaped by interactions with M96. An extremely faint (B approximately -10 or -11) dwarf irregular galaxy was also found. Questions about the distance and membership of th M96 group are addressed, and it is shown that many previous group catalogs must be in error. A mass-to-light ratio of less than 30 is found for the M96 group; a number of previous estimates are inflated by inclusion of background galaxies-a problem that may be widespread in group studies. It is shown that a ***hexagonal*** (or 'honeycomb') observing grid yields more optimized spatial frequency coverage than a rectangular grid.
CC A9850K Groups, clusters, and superclusters; A9850E Galactic structure; A9850T Intergalactic and intracluster matter; A9840B Interstellar matter; A9850F Masses; A9580D Radio, radar, and microwave
CT CLUSTERS OF GALAXIES; HYDROGEN NEUTRAL ATOMS; INTERGALACTIC MATTER; INTERSTELLAR MATTER; RADIOASTRONOMICAL OBSERVATIONS
ST interstellar matter; UHF; galaxy cluster; AD 1983 to 1987; Sab spiral galaxy; M96 group; galaxies; intergalactic ring; interactions; ringlike distribution; dwarf irregular galaxy; distance; membership; mass-to-light ratio; background galaxies; observing grid; optimized spatial frequency coverage; 211 mm; H
CHI H el
PHP wavelength 2.11E-01 m
ET H; I

L4 ANSWER 93 OF 95 INSPEC (C) 2006 IEE on STN
AN 1987:2902664 INSPEC DN A87076108
TI Structures and luminescence spectra of ***hexagonal*** rare-earth aluminates (review).
AU Bykovskii, P.I.; Lebedev, V.A.; Pisarenko, V.F.; Popov, V.V.
SO Journal of Applied Spectroscopy (May 1986) vol.44, no.5, p.425-39. 68 refs.
Price: CCCC 0021-9037/86/4405-0425$12.50
CODEN: JASYAP ISSN: 0021-9037
Translation of: Zhurnal Prikladnoi Spektroskopii (May 1986) vol.44, no.5,

p.711-28. 68 refs.
CODEN: ZPSBAX ISSN: 0514-7506
DT Journal; Translation Abstracted
TC Bibliography; General Review
CY Byelorussian SSR; USSR; United States
LA English
AB Oxide compounds of the rare-earth elements and materials based on them are used in lasers and space research, as well as optoelectronics, computing, and high-temperature technology. ***Hexagonal*** rare-earth aluminates (HREA) are compounds based on aluminum oxide that crystallize with ***hexagonal*** lattices. Interest in HREA has been raised by their use as phosphors for a new generation of fluorescent lamps developed in the early 1970s. These phosphors have the features of high chemical and radiation stability together with high quantum yield and little concentration and temperature-dependent quenching. The luminescence spectra and lasing properties of HREA crystals made in the early 1980s have shown prospects for use as ***laser*** ***media*** .
CC A0130R Reviews and tutorial papers; resource letters; A6160 Specific structure of inorganic compounds; A7855H Other inorganic materials
CT CRYSTAL ATOMIC STRUCTURE OF INORGANIC COMPOUNDS; LUMINESCENCE OF INORGANIC SOLIDS; RARE EARTH COMPOUNDS; REVIEWS
ST chemical stability; ***hexagonal lattices*** ; phosphors; fluorescent lamps; radiation stability; quantum yield; temperature-dependent quenching; lasing properties; ***laser media***
CHI Al ss, O ss
ET Al; O

L4 ANSWER 94 OF 95 INSPEC (C) 2006 IEE on STN
AN 1980:1478269 INSPEC DN A80030660
TI Quasi- ***hexagonal*** molecular packing in collagen fibrils.
AU Hulmes, D.J.S.; Miller, A. (European Molecular Biology Lab., CENG, Grenoble, France)
SO Nature (20-27 Dec. 1979) vol.282, no.5741, p.878-80. 39 refs.
CODEN: NATUAS ISSN: 0028-0836
DT Journal
TC Experimental
CY United Kingdom
LA English
AB Collagen molecules in native 66.8 nm (D) periodic fibrils are widely believed to be assembled into discrete, rope-like substructures, or microfibrils. Several types of microfibril have been proposed (2,4,5,7- and 8-standed), mainly on the basis of ***information*** contained in the ***medium*** angle X-ray diffraction patterns of native tendon fibres. The authors describe a re-interpretation of the X-ray data which leads to a new model for the crystalline regions of the fibril, based on quasi- ***hexagonal*** molecular packing without microfibrillar sub-structures, and hence having the character of a molecular crystal.
CC A3620C Conformation (statistics and dynamics); A6165 Specific structure of organic compounds; A8715B Structure, configuration, conformation, and active sites at the biomolecular level
CT CRYSTAL ATOMIC STRUCTURE OF ORGANIC COMPOUNDS; MACROMOLECULAR CONFIGURATIONS; MOLECULAR BIOPHYSICS; PROTEINS
ST collagen fibrils; periodic fibrils; microfibrils; X-ray diffraction patterns of native tendon fibres; X-ray data; molecular crystal; ***quasi hexagonal molecular packing*** ; rat tail tendon; basal unit cell parameters; collagen fibril structure; Bragg reflections

L4 ANSWER 95 OF 95 INSPEC (C) 2006 IEE on STN
AN 1976:842437 INSPEC DN A76003088
TI The 'turbidity' effect in a crystalline cloud ***medium*** , acted upon by CO2 ***laser*** radiation.
AU Volkovitskii, O.A.; Ivanov, E.V.; Kolomeev, M.P.; Kraskovskii, N.K.; Semenov, L.P.
SO Izvestiya Akademii Nauk SSSR, Fizika Atmosfery i Okeana (Aug. 1975) vol.11, no.8, p.861-3. 6 refs.
CODEN: IFAOAV ISSN: 0002-3515
Translation in: Izvestiya Academy of Sciences USSR, Atmospheric and Oceanic Physics. 6 refs.
CODEN: IAOPB2 ISSN: 0375-8303
DT Journal; Original Abstracted
TC Experimental
CY USSR; United States

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LA   Russian
AB   The results are reported of laboratory experiments in which an artificial
     ice cloud medium at -20 degrees C, consisting mainly of randomly oriented
       ***hexagonal***   ice platelets, was subjected to an 800 W cm-2 CO2 laser
     beam. The anomalous 'turbidity' effects produced are discussed.
CC   A4220G Scattering, diffraction, dispersion and polarization; A4260H Laser
     beam characteristics and interactions; A9260 Meteorology; B4330 Laser beam
     interactions and properties
CT   ATMOSPHERIC LIGHT PROPAGATION; CLOUDS; ICE; LASER BEAM EFFECTS; LIGHT
     TRANSMISSION; TURBIDITY
ST   CO2 laser radiation; artificial ice cloud medium;   ***randomly oriented***
  ***     hexagonal ice platelets***  ; anomalous turbidity effects; crystalline
     cloud particles
ET   C*O; CO2; C cp; cp; O cp; C


=> s l1 and (diffraction(10a)(x or xray)
UNMATCHED LEFT PARENTHESIS 'AND (DIFFRACTIO'
The number of right parentheses in a query must be equal to the
number of left parentheses.

=> s l1 and (diffraction(10a)(x or xray))
L5          410 L1 AND (DIFFRACTION(10A)(X OR XRAY))

=> s (c or a) and l5
L6          361 (C OR A) AND L5

=> s (sb or antimony) and l5
L7           85 (SB OR ANTIMONY) AND L5

=> s (te or tellurium) and l5
L8           75 (TE OR TELLURIUM) AND L5

=> d all 1-75

L8   ANSWER 1 OF 75  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:667538  CAPLUS
DN   143:336156
ED   Entered STN:  29 Jul 2005
TI   The nitrogen doping effect on the properties of Ge-In-Sb-  ***Te***
     phase-change recording   ***media***   investigated by blue-light
       ***laser***
AU   Yeh, Tung-Ti; Hsieh, T.-E.; Shieh, Han-Ping D.
CS   Department of Materials Science and Engineering, National Chiao-Tung
     University, Hsinchu, 30010, Taiwan
SO   Thin Solid Films (2005), 488(1-2), 211-216
     CODEN: THSFAP; ISSN: 0040-6090
PB   Elsevier B.V.
DT   Journal
LA   English
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
AB   This work investigates the thermal, optical and recrystn. properties as
     well as the microstructure of nitrogen-doped Ge-In-Sb-  ***Te***   (GIST)
     phase-change material when irradiated by blue-light laser.  The exptl.
     results showed that nitrogen doping at the condition of N2/Ar sputtering
     gas flow ratio equals to 3% might enhance the recrystn. speed of GIST
     recording layer up to 1.5 times.  However, the disk failed when too much
     nitrogen (N2/Ar .gtoreq. 5.0%) was introduced.  The data obtained by
     differential scanning calorimetry,   ***x***  -ray   ***diffraction***
     and ellipsometry revealed changes of thermal and optical properties due to
     the nitrogen doping in GIST.  When appropriate amt. of nitrogen was added,
     the activation energy (Ea) of amorphous-cryst. phase transition of GIST
     decreased and the optical consts. of amorphous and cryst. phases (except
     the k value of amorphous phase) gradually reduced with the increase of
     wavelength in the range of 600-750 nm.  Modulation simulation based on the
     reflectively of doped GIST layers obtained from static test indicated that
     appropriate nitrogen doping benefited the signal characteristics of
       ***optical***    ***disks***  .  Transmission electron microscopy obsd.
     numerous tiny ppts. uniformly distributed in the doped GIST layers.  These
     were believed to be nitride particles generated by nitrogen doping that
     might offer the preferential sites for amorphous-cryst. phase transition
```

so that the recrystn. speed was accelerated.
ST nitrogen doped telluride phase change optical recording material; antimony germanium indium telluride optical recording microstructure recrystn property
IT Crystallization
Doping
Microstructure
Optical constants
Recrystallization
(optical and recrystn. properties and microstructure of nitrogen-doped Ge-In-Sb- ***Te*** phase-change material irradiated by blue-light laser)
IT ***Optical*** ***disks***
Optical recording materials
(phase-change; ***optical*** and recrystn. properties and microstructure of nitrogen-doped Ge-In-Sb- ***Te*** phase-change material irradiated by blue-light laser)
IT 1314-98-3, Zinc sulfide, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(optical and recrystn. properties and microstructure of nitrogen-doped Ge-In-Sb- ***Te*** phase-change material irradiated by blue-light laser)
IT 444753-50-8, Antimony germanium indium telluride
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process); USES (Uses)
(optical and recrystn. properties and microstructure of nitrogen-doped Ge-In-Sb- ***Te*** phase-change material irradiated by blue-light laser)
IT 7727-37-9D, Nitrogen, doped germanium-indium-antimony- ***tellurium***
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(optical and recrystn. properties and microstructure of nitrogen-doped Ge-In-Sb- ***Te*** phase-change material irradiated by blue-light laser).
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L8 ANSWER 2 OF 75 CAPLUS
AN 2005:133755 CAPLUS
DN 143:485754
ED Entered STN: 16 Feb 2005
TI A semiconducting thermooptic material for potential application to super-resolution optical data storage

AU Lee, H. S.; Cheong, B.; Lee, T. S.; Lee, K. S.; Kim, W. M.; Huh, J. Y.
CS Dept. of Materials Science Engineering, College of Engineering, Korea University, Seoul, Sungbuk-ku, 136-701, S. Korea

SO Surface and Coatings Technology (2005), 193(1-3), 335-339
CODEN: SCTEEJ; ISSN: 0257-8972
PB Elsevier B.V.
DT Journal
LA English

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB To find its practical use in ultrahigh d. optical data storage, superresoln. (SR) technique needs a material that can render a high SR

capability at no cost of durability against repeated read/write. Thermoelec. materials are proposed as candidates capable of yielding solid state SR effects in the absence of phase changes that are detrimental to durability. As a prototype material, PbTe is selected due to a large thermoelec. Seebeck coeff. and a high stability of a cryst. single phase state up to its melting temp. of 924.degree. C. A preliminary study of Pb51Te49 thin films was carried out with the following findings: under exposure to pulsed light, completely reversible changes in transmittance take place regardless of power. Then, light transmittance grows with increasing laser power and this is not due to melting except at relatively high powers. By way of optical calcns. using the measured reflectance and transmittance values combined with thermal calcns., a temp. variation of effective optical consts. (n, k) was also estd. to find that both of them decrease with increasing temp.

ST semiconducting thermooptic material optical data storage lead ***tellurium*** alloy

IT Optical constants
Optical ***disks***
Optical recording materials
Optical reflection
Optical transmission
Thermooptical effect
X -ray ***diffraction***
(semiconducting Pb- ***Te*** thermooptic material for application to super-resoln. optical data storage)

IT Metallic glasses
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(semiconducting Pb- ***Te*** thermooptic material for application to super-resoln. optical data storage)

IT 1314-98-3, Zinc sulfide, uses 7631-86-9, Silica, uses
RL: NUU (Other use, unclassified); USES (Uses)
(semiconducting Pb- ***Te*** thermooptic material for application to super-resoln. optical data storage)

IT 7439-92-1, Lead, properties 13494-80-9, ***Tellurium*** , properties 869666-58-0
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(semiconducting Pb- ***Te*** thermooptic material for application to super-resoln. optical data storage)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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L8 ANSWER 3 OF 75 CAPLUS
AN 2005:81000 CAPLUS
DN 143:295110
ED Entered STN: 31 Jan 2005
TI Optical interactions in ZnO-TeO2 Bi-layer for AO device applications
AU Nayak, Ranu; Nayak, Abhijit; Gupta, Vinay; Sreenivas, K.
CS Department of Physics & Astrophysics, University of Delhi, Delhi, 110007, India
SO Proceedings - IEEE Ultrasonics Symposium (2003), (Vol. 1), 493-496
CODEN: PIEUEZ; ISSN: 1051-0117
PB Institute of Electrical and Electronics Engineers
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB A bi-layer structure using amorphous TeO2 and piezoelec. ZnO thin film was grown by reactive radiofrequency sputtering on Corning glass (cg) substrate to study its compatibility for an acousto-optic (AO) device. Initially TeO2-x films were grown at different O partial pressures and, structural and optical characterizations were performed to optimize the O2 gas pressure. Effect of post-deposition annealing was studied for achieving low optical loss. Optical waveguiding was obsd. by prism coupling technique and the loss measurements were done. Subsequently, a high quality c-axis oriented ZnO film was grown, which is known to be suitable for SAW propagation. Finally, a TeO2-ZnO bi-layer was grown with a clean interface and optical waveguiding was obsd. Implications related to large thickness of ZnO are discussed and a better alternate feasible TeO2-ZnO structure is proposed.
ST optical interaction zinc oxide ***tellurium*** bilayer AO device
IT Optical instruments
(acousto-; optical interactions in ZnO-TeO2 bi-layer for AO device applications)
IT Annealing
(effect of; optical interactions in ZnO-TeO2 bi-layer for AO device applications)
IT ***X*** -ray ***diffraction***
(of zinc oxide films; optical interactions in ZnO-TeO2 bi-layer for AO device applications)
IT Glass substrates
Optical waveguides
Surface acoustic wave
(optical interactions in ZnO-TeO2 bi-layer for AO device applications)
IT Sputtering
(radio-frequency, fabrication method; optical interactions in ZnO-TeO2 bi-layer for AO device applications)
IT 7440-37-1, Argon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(deposition in ***medium*** contg.; ***optical*** interactions in ZnO-TeO2 bi-layer for AO device applications)
IT 1314-13-2, Zinc oxide, properties 7446-07-3, ***Tellurium*** dioxide
RL: DEV (Device component use); OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence); USES (Uses)
(optical interactions in ZnO-TeO2 bi-layer for AO device applications)
IT 7782-44-7, Oxygen, properties
RL: PRP (Properties)
(sputtering under different pressures of; optical interactions in ZnO-TeO2 bi-layer for AO device applications)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L8 ANSWER 4 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:1007117 CAPLUS
DN 142:139113
ED Entered STN: 23 Nov 2004
TI Structural, electric and kinetic parameters of ternary alloys of GeSbTe
AU Morales-Sanchez, E.; Prokhorov, E. F.; Gonzalez-Hernandez, J.; Mendoza-Galvan, A.
CS Unidad Queretaro, Centro de Investigacion y de Estudios Avanzados del IPN, Queretaro, 76230, Mex.
SO Thin Solid Films (2004), Volume Date 2005, 471(1-2), 243-247
CODEN: THSFAP; ISSN: 0040-6090
PB Elsevier B.V.
DT Journal
LA English
CC 56-12 (Nonferrous Metals and Alloys)
Section cross-reference(s): 75, 76
AB Thin amorphous films of GeSbTe were widely employed in the technol. used

for phase change ***optical*** memory or compact ***disks*** . We report on measurements of resistance, transmittance, and ***x*** -ray ***diffraction*** in thin films with stoichiometric compns. of Ge1Sb4Te7, Ge1Sb2Te4, Ge2Sb2Te5, and Ge4Sb1Te5. The resistivity, lattice const., and the temp. at which transformation from the amorphous phase to the cubic cryst. structure occurs were calcd. for each stoichiometric compn., and the energy activation was detd., applying Kissinger's model. The Ge4Sb1Te5 compn. has the highest crystn. temp. (425 K), the highest resistivity (0.178 .OMEGA. cm), the greatest Ea (3.09 eV), and the lowest lattice const. (a = 5.975 .ANG.) in the cubic phase at 170.degree..

ST antimony germanium ***tellurium*** ternary alloy crystn resistivity

IT Films
(amorphous; structural, elec., and kinetic parameters of ternary alloys of GeSbTe)

IT Crystallization temperature
Electric resistance
(structural, elec., and kinetic parameters of ternary alloys of GeSbTe)

IT Alloys, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(ternary; structural, elec., and kinetic parameters of ternary alloys of GeSbTe)

IT 12140-80-6, Antimony germanium telluride (Sb4GeTe7) 16150-49-5, Antimony germanium telluride (Sb2Ge2Te5) 16150-59-7, Antimony germanium telluride (Sb2GeTe4) 118651-49-3
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(structural, elec., and kinetic parameters of ternary alloys of GeSbTe)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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AN 2004:963518 CAPLUS
DN 141:418005
ED Entered STN: 12 Nov 2004
TI Phase-change rewritable ***optical*** ***disks***
IN Iwata, Kaneyuki; Tashiro, Hiroko; Harigai, Masato; Ito, Kazunori; Tani, Katsuhiko
PA Ricoh Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G11B007-24
ICS B41M005-26
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004318989	A2	20041111	JP 2003-110819	20030415
PRAI	JP 2003-110819		20030415		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004318989	ICM	G11B007-24
	ICS	B41M005-26
	IPCI	G11B0007-24 [ICM,7]; B41M0005-26 [ICS,7]

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               FTERM  2H111/EA04; 2H111/EA23; 2H111/FB04; 2H111/FB09;
                      2H111/FB12; 2H111/FB17; 2H111/FB20; 2H111/FB30;
                      5D029/JA01; 5D029/JB18; 5D029/JC20
AB   The title disk has a phase-change recording layer on a substrate, wherein
     the crystal phase of the recording layer does not have a peak at d =
     2.56-2.71 .ANG.( 2.theta. = 16.5-17.5.degree.) by powder Cu-K.alpha.
       ***X***  -ray   ***diffraction***   anal.  The   ***optical***
       ***disk***   shows good characteristics on repeated use and data storage
     and provides high speed and high d. data recording.
ST   phase rewritable   ***optical***     ***disk***
IT   Crystal structure
        (dopant in optical recording layer of phase-change rewritable
          ***optical***     ***disks***  )
IT   Erasable   ***optical***     ***disks***
        (phase-change rewritable   ***optical***     ***disks***  )
IT   7440-36-0, Antimony, uses   13494-80-9,   ***Tellurium***  , uses
     RL: DEV (Device component use); USES (Uses)
        (component element of optical recording layer with dopant)
IT   7440-22-4, Silver, uses   7440-56-4, Germanium, uses   7440-74-6, Indium,
     uses
     RL: MOA (Modifier or additive use); USES (Uses)
        (dopant in optical recording layer of phase-change rewritable
          ***optical***     ***disks***  )

L8   ANSWER 6 OF 75  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2004:905320  CAPLUS
DN   141:386460
ED   Entered STN:  29 Oct 2004
TI   Phase-change   ***optical***   recording   ***disk***   that is compatible
     with a high transfer rate and has superior thermal stability in an
     amorphous phase
IN   Shingai, Hiroshi; Chihara, Hiroshi; Hirata, Hideki
PA   TDK Corporation, Japan
SO   U.S. Pat. Appl. Publ., 9 pp.
     CODEN: USXXCO
DT   Patent
LA   English
IC   ICM  G11B007-24
INCL 369094000; 369288000
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   US 2004213125        A1    20041028    US 2004-829355         20040422
     JP 2004322468        A2    20041118    JP 2003-120205         20030424
PRAI JP 2003-120205       A     20030424
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  -----------------------------------------------
 US 2004213125   ICM    G11B007-24
                 INCL   369094000; 369288000
                 IPCI   G11B0007-24 [ICM,7]
                 NCL    369/094.000
                 ECLA   G11B007/0045P; G11B007/243
 JP 2004322468   IPCI   B41M0005-26 [ICM,7]; G11B0007-24 [ICS,7]
                 FTERM  2H111/EA04; 2H111/EA23; 2H111/EA39; 2H111/FB09;
                        2H111/FB12; 2H111/FB20; 5D029/JA01
AB   Phase-change   ***optical***   recording   ***disk***   is described that
     is compatible with a high transfer rate and has superior thermal stability
     in an amorphous phase.  Thus, the recording layer includes at least Sb,
     Tb, and   ***Te***   .  When indexing as a hexagonal lattice has been
     performed in a state corresponding to the crystal phase, the recording
     layer has a structure where an axial ratio c/a of a c-axis length to an
     a-axis length in the hexagonal lattice is between 2.590 and 2.702
     inclusive.
ST   rewritable   ***optical***   phase change   ***disk***   terbium antimony
       ***tellurium***
IT   Amorphous structure
     Crystal morphology
     Thermal stability
        ***X***  -ray   ***diffraction***
```

(phase-change ***optical*** recording ***disk*** that is compatible with high transfer rate and has superior thermal stability in amorphous phase)
IT Erasable ***optical*** ***disks***
(phase-change; phase-change ***optical*** recording ***disk*** that is compatible with high transfer rate and has superior thermal stability in amorphous phase)
IT 1327-50-0D, Antimony telluride, terbium substituted
RL: DEV (Device component use); USES (Uses)
(phase-change ***optical*** recording ***disk*** that is compatible with high transfer rate and has superior thermal stability in amorphous phase)

L8 ANSWER 7 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:423824 CAPLUS
DN 141:147787
ED Entered STN: 26 May 2004
TI Mechanisms of initialization of doped Sb- ***Te*** phase-change media
AU Towlson, Samantha J.; Elwell, Clifford A.; Davies, Clare E.; Greer, A. Lindsay
CS Dept. of Materials Science and Metallurgy, University of Cambridge, Cambridge, UK
SO Materials Research Society Symposium Proceedings (2004), 803(Advanced Data Storage Materials and Characterization Techniques), 213-218
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75
AB Laser initialization of the chalcogenide ***optical*** -recording ***medium*** Ag-In-Sb- ***Te*** is studied using TEM of the resulting microstructure. Initialization beam power and velocity are varied. The av. inhomogeneous strain of the chalcogenide is estd. from x-ray peak broadening. At high power and low velocity a clearly defined columnar grain structure with low strain is produced, typical of directional solidification. At low power and high velocity the initialized structure has a high d. of defects and high strain; this is attributed to crystn. from the amorphous rather than the liq. state. The beam power and linear velocity of laser initialization may therefore be used to control the microstructure.
ST antimony indium silver telluride ***optical*** recording ***medium*** ***laser*** initialization; defect antimony indium silver telluride optical recording laser initialization; strain antimony indium silver telluride optical recording laser initialization; XRD antimony indium silver telluride optical recording laser initialization; crystn antimony indium silver telluride optical recording laser initialization; phase change antimony indium silver telluride optical recording initialization
IT Crystallization
Laser radiation
(mechanisms of laser initialization of Ag-In-Sb- ***Te*** phase-change media)
IT Defects in solids
Strain
X -ray ***diffraction***
(mechanisms of laser initialization of Ag-In-Sb- ***Te*** phase-change media with)
IT Optical recording materials
(phase change; mechanisms of laser initialization of Ag-In-Sb- ***Te*** phase-change media)
IT 149087-96-7, Antimony indium silver telluride
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(mechanisms of laser initialization of Ag-In-Sb- ***Te*** phase-change media)
RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L8   ANSWER 8 OF 75  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2004:330949  CAPLUS
DN   140:347629
ED   Entered STN:  23 Apr 2004
TI   Initialization of phase change   ***optical***     ***disk***   made from
     antimony and   ***tellurium***   form improved recording characteristics
IN   Deguchi, Hiroshi; Suzuki, Eiko; Yuzuhara, Hajime; Miura, Hiroshi; Abe,
     Mikiko
PA   Ricoh Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 15 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM  G11B007-26
     ICS  B41M005-26; G11B007-0055; G11B007-24
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
     Section cross-reference(s): 75
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.        DATE
     ---------------     ----   --------   --------------------   --------
PI   JP 2004127485        A2    20040422   JP 2003-203213         20030729
PRAI JP 2002-222470       A     20020731
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  ----------------------------------------------
 JP 2004127485   ICM    G11B007-26
                 ICS    B41M005-26; G11B007-0055; G11B007-24
                 IPCI   G11B0007-26 [ICM,7]; B41M0005-26 [ICS,7]; G11B0007-0055
                        [ICS,7]; G11B0007-24 [ICS,7]
                 FTERM  2H111/EA04; 2H111/EA05; 2H111/EA23; 2H111/EA31;
                        2H111/FA01; 2H111/FA12; 2H111/FA14; 2H111/FA21;
                        2H111/FB05; 2H111/FB09; 2H111/FB12; 5D029/JA01;
                        5D029/JB18; 5D029/JB35; 5D029/LB07; 5D029/MA14;
                        5D090/AA01; 5D090/BB05; 5D090/CC11; 5D090/DD01;
                        5D121/AA01; 5D121/GG26
AB   The process is carried out under the crystn. condition in which the
     recording layer contg. Sb and   ***Te***   gives P1/P2.gtoreq.10 in the
       ***x***  -ray   ***diffraction***   pattern, wherein P1 is the peak
     intensity at 2.theta. = 27-31.degree. and P2 is the peak intensity at
     2.theta. = 39-44.degree..  The recording layer further contains Ge.
ST   initialization crystn phase change   ***optical***     ***disk***
IT   Crystallization
         ***Optical***     ***disks***
        (initialization of phase change   ***optical***     ***disk***   made
        from antimony and   ***tellurium***   )
IT   667416-58-2   667416-59-3   667416-60-6   667416-61-7   667416-63-9
     667416-64-0   667416-65-1   667416-66-2   667416-67-3   681161-41-1
     RL: DEV (Device component use); EPR (Engineering process); PEP (Physical,
     engineering or chemical process); PROC (Process); USES (Uses)
        (initialization of phase change   ***optical***     ***disk***   made
        from antimony and   ***tellurium***   )

L8   ANSWER 9 OF 75  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2004:214787  CAPLUS
DN   140:261474
ED   Entered STN:  18 Mar 2004
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TI     ***Optical***   recording   ***medium***
IN   Shingai, Hiroshi; Chihara, Hiroshi; Tanaka, Yoshitomo; Oishi, Masahiro;
     Utsunomiya, Hajime
PA   TDK Corporation, Japan
SO   Eur. Pat. Appl., 17 pp.
     CODEN: EPXXDW
DT   Patent
LA   English
IC   ICM  G11B007-24
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   EP 1398776           A1    20040317    EP 2003-19696          20030909
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
     JP 2004122768        A2    20040422    JP 2003-313706         20030905
     US 2004053166        A1    20040318    US 2003-657232         20030909
     CN 1494071           A     20040505    CN 2003-159377         20030911
PRAI JP 2002-264873       A     20020911
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
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 EP 1398776      ICM    G11B007-24
                 IPCI   G11B0007-24 [ICM,7]
                 ECLA   G11B007/243
 JP 2004122768   IPCI   B41M0005-26 [ICM,7]; G11B0007-24 [ICS,7]
                 FTERM  2H111/EA05; 2H111/EA23; 2H111/FA01; 2H111/FA12;
                        2H111/FA14; 2H111/FA21; 2H111/FB03; 2H111/FB09;
                        2H111/FB12; 5D029/JA01; 5D029/JB50; 5D029/JC17;
                        5D029/JC20
 US 2004053166   IPCI   G11B0007-24 [ICM,7]
                 IPCR   G11B0007-24 [I,C]; G11B0007-243 [I,A]
                 NCL    430/270.130
                 ECLA   G11B007/243
 CN 1494071      IPCI   G11B0007-24 [ICM,7]
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AB   An   ***optical***   recording   ***medium***   according to the present invention includes a phase change recording layer where reversible phase changes between a crystal phase and an amorphous phase are used, wherein the recording layer includes at least Sb, Mn, and   ***Te***   and, in a state corresponding to the crystal phase, has a structure where one diffracted ray is detected by   ***X***   -ray   ***diffraction***   as being present in resp. ranges of spacings (A) of 3.10.+-.0.03, 2.25.+-.0.03, and 2.15.+-.0.03, in a range of between 3.13 and 2.12 spacing inclusive, with diffracted rays not being detected in other ranges within the 3.13 to 2.12 spacing range. Accordingly, the   ***optical***   recording   ***medium***   can be reliably crystd. even when the irradn. time of laser light is short, and also has superior thermal stability in an amorphous state.


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ST     ***optical***   recording   ***medium***
IT     ***Optical***   recording
         ***Optical***   recording materials
         ***X***   -ray   ***diffraction***
        (  ***optical***   recording   ***medium***  )
IT   7439-96-5, Manganese, uses   7440-36-0, Antimony, uses   13494-80-9,
       ***Tellurium***   , uses
     RL: DEV (Device component use); USES (Uses)
        (  ***optical***   recording   ***medium***   contg.)
RE.CNT  13    THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(7) Matsushita Electric Ind Co Ltd; EP 1132904 A 2001 CAPLUS
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(10) Tdk Corp; WO 0185464 A 2001 CAPLUS
(11) Tdk Corp; EP 1281537 A 2003 CAPLUS

(12) Toshiba Corp; JP 02167790 A 1990 CAPLUS
(13) Watanabe, K; US 4460636 A 1984 CAPLUS

L8 ANSWER 10 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:180515 CAPLUS
DN 140:243650
ED Entered STN: 05 Mar 2004
TI Phase change type ***optical*** ***disk*** and its initialization
IN Deguchi, Hiroshi; Suzuki, Eiko; Yuzuhara, Hajime; Miura, Hiroshi; Abe, Mikiko
PA Ricoh Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G11B007-26
ICS G11B007-0055; G11B007-24
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004071025	A2	20040304	JP 2002-227247	20020805
PRAI	JP 2002-227247		20020805		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2004071025	ICM	G11B007-26
	ICS	G11B007-0055; G11B007-24
	IPCI	G11B0007-26 [ICM,7]; G11B0007-0055 [ICS,7]; G11B0007-24 [ICS,7]
	FTERM	5D029/HA06; 5D029/JA01; 5D029/JB18; 5D029/JB35; 5D029/LB07; 5D029/MA14; 5D090/AA01; 5D090/BB05; 5D090/CC11; 5D090/DD01; 5D121/AA01; 5D121/GG26

AB The invention relates to an ***optical*** ***disk*** having a phase change type recording layer made mainly up of Sb and ***Te*** , wherein the initialized recording layer satisfies a P1/P2 .ltoreq.5.0 [P1 = ***x*** -ray ***diffraction*** peak intensity at 27-31.degree.; P2 = ***x*** -ray ***diffraction*** peak intensity at 39-44.degree.]. The ***optical*** ***disk*** initialization is carried out by a specified laser scanning rate.
ST ***optical*** ***disk*** phase change type initialization antimony ***tellurium***
IT ***Optical*** ***disks***
(phase change type ***optical*** ***disk*** and its initialization)
IT 667416-58-2 667416-59-3 667416-60-6 667416-61-7 667416-62-8 667416-63-9 667416-64-0 667416-65-1 667416-66-2 667416-67-3
RL: DEV (Device component use); USES (Uses)
(recording layer of phase change type ***optical*** ***disk*** for new initialization method)

L8 ANSWER 11 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:733537 CAPLUS
DN 140:189164
ED Entered STN: 19 Sep 2003
TI Laser-induced changes on the complex refractive indices of phase-change thin film
AU Liu, Bo; Ruan, Hao; Gan, Guxi
CS Shanghai Inst. Optics Fine Mech., Chin. Acad. Sci., Shanghai, 201800, Peop. Rep. China
SO Optical Engineering (Bellingham, WA, United States) (2003), 42(9), 2702-2706
CODEN: OPEGAR; ISSN: 0091-3286
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 56, 77
AB The refractive indexes of cryst. phase-change films are usually obtained by thermal-induced crystn. However, this is not accurate, because the

crystn. of phase-change film in rewritable ***optical*** ***disks*** is ***laser*** induced. The authors use the initializer to crystallize the phase-change films. The dependence of the refractive index n and the extinction coeff. k of the phase-change films on the initialization conditions were studied. Remarkable changes of the refractive indexes (esp. k) are found when the initialization laser power d. is 6.63 mW/.mu.m2 and the initialization velocity is 4.0 m/s. At the same time, the structure changes of the phase-change films are also studied. This dependence is explained by the structure change of the films. These results are significant in improving the accuracy of optical design and the thermal simulation of phase-change ***optical*** ***disks*** , as well as in the study of phase-change ***optical*** ***disks*** at shorter wavelengths.

ST laser radiation refractive index phase change thin film; germanium antimony ***tellurium*** film ***optical*** ***disk*** ; silver indium antimony ***tellurium*** film refractive index

IT Absorptivity
Laser crystallization
Optical ***disks***
Refractive index
X -ray ***diffraction***
(***laser*** -induced changes on complex refractive indexes of phase-change thin film)

IT Polycarbonates, uses
RL: DEV (Device component use); NUU (Other use, unclassified); USES (Uses)
(laser-induced changes on complex refractive indexes of phase-change thin film)

IT 87715-69-3 158282-93-0
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(laser-induced changes on complex refractive indexes of phase-change thin film)

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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(11) Peng, P; Appl Opt 2001, V40(28), P5088
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(13) Ritter, E; Appl Opt 1976, V15(10), P2318 CAPLUS
(14) Ritter, E; Appl Opt 1981, V20(1), P21 CAPLUS
(15) Xie, Q; Proc SPIE 2000, V4085, P112
(16) Xie, Q; Proc SPIE 2000, V4085, P117

L8 ANSWER 12 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:715803 CAPLUS
DN 139:237789
ED Entered STN: 12 Sep 2003
TI Phase change rewritable ***optical*** recording ***media***
IN Tashiro, Hiroko; Kageyama, Yoshiyuki; Harigai, Masato; Suzuki, Eiko; Yuzuhara, Hajime; Miura, Hiroshi; Mizutani, Miki; Ito, Kazunori; Onagi, Nobuaki
PA Ricoh Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G11B007-24
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003257077	A2	20030912	JP 2002-59280	20020305
PRAI	JP 2002-59280		20020305		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2003257077	ICM	G11B007-24
	IPCI	G11B0007-24 [ICM,7]

AB The title recording medium has a phase change recording layer mainly made of Sb and ***Te*** on a substrate, wherein the recording layer has ***x*** -ray ***diffraction*** peaks at 2.14.+-.0.03 and 2.21.+-.0.03 (.ANG.) lattice distance, and one of the position chosen from 3.09.+-.0.03, 1.75.+-.0.03, 1.54.+-.0.03, and 1.37.+-.0.03. The medium is suitable for high linear and high d. recording and shows good characteristics on the repeated recording and data storageability.
ST phase rewritable ***optical*** recording ***media***
IT Optical recording materials
(phase change; phase change ***optical*** recording ***media***)
IT 594866-17-8 594866-18-9 594866-19-0 594866-20-3 594866-21-4
594866-22-5 594866-23-6 594866-24-7 594866-25-8 594866-26-9
594866-27-0 594866-28-1 594866-29-2
RL: DEV (Device component use); USES (Uses)
(recording layer of phase change ***optical*** recording ***media***)

L8 ANSWER 13 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:623023 CAPLUS
DN 139:355981
ED Entered STN: 14 Aug 2003
TI Thermodynamic parameters, microstructures and optical properties of Sb-Se-based and Ge-Sb- ***Te*** -based phase change ***optical*** ***disc*** recording ***media***
AU Chen, Zhiwu; Hu, Qiaosheng; Zhang, Ying; Cheng, Xuan; Zhang, Xiyan
CS Dep. Mater. Sci. Eng., Xiamen Univ., Xiamen, 361005, Peop. Rep. China
SO Jinshu Xuebao (2003), 39(7), 775-780
CODEN: CHSPA4; ISSN: 0412-1961
PB Kexue Chubanshe
DT Journal
LA Chinese
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Thermodn. parameters, the structural transformation and optical properties before and after the phase transforms of amorphous films of Sb-Se-based and Ge-Sb- ***Te*** -based phase change ***optical*** ***disk*** recording ***media*** were studied by using DSC, ***X*** -ray ***diffraction*** and spectrometer. The results show that Sb-Se-based alloys in amorphous state have not a satisfactory light stability, as its reflectivity changes significantly fast with the change of the wavelength. The Ge-Sb- ***Te*** alloys with two compns. have a relatively high reflectivity at any wavelength segment, and possess an ideal light stability in amorphous state, no obvious change occurs in their reflectivity with the changes of the wavelength.
ST thermodn microstructure light stability antimony selenium alloy ***optical*** ***disk*** ; antimony germanium ***tellurium*** ***optical*** ***disk*** thermodn microstructure light stability
IT Activation energy
Crystallization temperature
Microstructure
Optical ***disks***
Optical properties
Optical reflection
Thermodynamics
(thermodn. parameters, microstructures, and ***optical*** properties of Sb-Se-based and Ge-Sb- ***Te*** -based phase-change ***optical*** ***disk*** recording ***media***)
IT 105779-12-2 122613-82-5 132913-91-8 618881-66-6 618881-67-7
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(thermodn. parameters, microstructures, and optical properties of Sb-Se-based and Ge-Sb- ***Te*** -based phase-change ***optical*** ***disk*** recording ***media***)

L8 ANSWER 14 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:30270 CAPLUS
DN 139:221510

ED Entered STN: 14 Jan 2003
TI Study of the crystallization behavior of Ag-In-Sb- ***Te*** phase
change optical recording film
AU Mongia, Geeta; Bhatnagar, Promod K.
CS Dep. Electronic Sci., Univ. of Delhi, New Delhi, 110021, India
SO Optical Engineering (Bellingham, WA, United States) (2003), 42(1), 148-150
CODEN: OPEGAR; ISSN: 0091-3286
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
AB Recently the demand for high-speed and high-d. ***optical*** recording ***media*** using a direct overwrite scheme is very high. Among some of the potential candidates, the AgInSbTe alloy appears to be one of the promising materials that has drawn worldwide attention. It can give direct overwrite capability within a short period of time and is reported to give a well-defined shape with sharp edges, leading to intrinsically lower jitter values, thereby increasing the linear d. Hence, considerable interest has been focused on the study of the crystn. behavior of AgInSbTe alloy. Different cryst. phases are obsd. due to thermal annealing of AgInSbTe four-element alloy films. Results of the ***x*** -ray ***diffraction*** anal. of amorphous and cryst. (AgSbTe) ***x*** (In1-ySby)1- ***x*** films with x = 0.2, 0.4 and y = 0.7, deposited by thermal evapn. technique are presented. The difference in crystn. behavior of the cryst. phases formed after 1 h of isothermal annealing at temp. between 200 and 400.degree. C are studied through ***x*** -ray ***diffraction*** anal. The exptl. results are presented for a compn. close to eutectic Sb69Te31 in which some of the ***Te*** is replaced by Ag and In. The results indicate that the growth of the cryst. phases depends on the annealing temp. and it is also affected by the change in the compn.
ST crystn silver indium antimony ***tellurium*** optical phase change
recording
IT Amorphization
Annealing
Crystallization
X -ray ***diffraction***
(crystn. behavior of Ag-In-Sb- ***Te*** phase change optical
recording film)
IT Optical recording
Optical recording materials
(erasable, phase-change; crystn. behavior of Ag-In-Sb- ***Te***
phase change optical recording film)
IT 7440-36-0, Antimony, properties 12002-77-6, Indium silver
telluride(InAgTe2) 15122-76-6, Antimony silver telluride(SbAgTe2)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP
(Physical process); PROC (Process)
(cryst. phase; crystn. behavior of Ag-In-Sb- ***Te*** phase change
optical recording film)
IT 586959-17-3, Antimony indium silver telluride (Sb0.76In0.24Ag0.2Te0.2)
586959-18-4, Antimony indium silver telluride (Sb0.82In0.18Ag0.4Te0.4)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP
(Physical process); PROC (Process)
(crystn. behavior of Ag-In-Sb- ***Te*** phase change optical
recording film)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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Philips Optical Disc Technology Centre 1999
(3) Chou, L; Jpn J Appl Phys, Part 1 2001, V40, P3375 CAPLUS
(4) Iwasaki, H; Jpn J Appl Phys, Part 1 1993, V32, P5241 CAPLUS
(5) Mongia, G; presented at ITCOM 2002 2002
(6) Muramatsu, E; Jpn J Appl Phys, Part 1 1998, V37, P2257 CAPLUS
(7) Zhou, G; Jpn J Appl Phys, Part 1 1999, V38 CAPLUS

L8 ANSWER 15 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:611295 CAPLUS
DN 137:302053
ED Entered STN: 16 Aug 2002
TI Structural and thermal analysis of Ag-Sb- ***Te*** alloy and its films

for phase change optical memories
AU Sharma, Yagya Deva; Bhatnagar, P. K.
CS Department of Electronic Science, University of Delhi South Campus, New Delhi, 110 021, India
SO Optical Engineering (Bellingham, WA, United States) (2002), 41(7), 1668-1673
CODEN: OPEGAR; ISSN: 0091-3286
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB An Ag-Sb- ***Te*** alloy and its films are prepd. as a new optical recording amorphous cryst. (a.fwdarw.c) phase transformation material. The crystn. process of Ag-Sb- ***Te*** films is systematically studied through measurement of recording characteristics to solve the trade-off problem between data (amorphous) stability and erasing sensitivity. Phase change ***optical*** recording ***disks*** demonstrate long thermal stability of the amorphous recording marks. The crystn. process of Ag-Sb- ***Te*** material was studied using DTA, and the nature of the material was studied by ***x*** -ray ***diffraction*** (XRD), SEM, and transmission electron microscopy (TEM), resp. The films were studied for both cases of before and after annealing. It was concluded that the alloy (Ag-Sb- ***Te***) could be used as a phase change optical memory material.
ST structural thermal analysis silver antimony ***tellurium*** alloy optical recording; phase change optical memory material silver antimony ***tellurium***
IT Telluride glasses
RL: PRP (Properties)
(antimony silver telluride; structural and thermal anal. of Ag-Sb- ***Te*** alloy and its films for phase-change optical memories)
IT Optical recording materials
(erasable, phase-change; structural and thermal anal. of Ag-Sb- ***Te*** alloy and its films for phase-change optical memories)
IT Erasable ***optical*** ***disks***
(phase-change; structural and thermal anal. of Ag-Sb- ***Te*** alloy and its films for phase-change optical memories)
IT Amorphization
Annealing
Crystallization
Thermal stability
(structural and thermal anal. of Ag-Sb- ***Te*** alloy and its films for phase-change optical memories)
IT Metallic glasses
RL: PRP (Properties)
(structural and thermal anal. of Ag-Sb- ***Te*** alloy and its films for phase-change optical memories)
IT 7440-22-4, Silver, properties 7440-36-0, Antimony, properties 13494-80-9, ***Tellurium*** , properties
RL: PRP (Properties)
(antimony silver telluride; structural and thermal anal. of Ag-Sb- ***Te*** alloy and its films for phase-change optical memories)
IT 408306-47-8 408306-48-9 408306-49-0
RL: PRP (Properties)
(structural and thermal anal. of Ag-Sb- ***Te*** alloy and its films for phase-change optical memories)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Bradley, A; Optical Storage for Computer Technology and Applications 1998, P22
(3) Chou, L; Jpn J Appl Phys, Part 1 1999, V38, P1614 CAPLUS
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(9) Mitsuhashi, Y; Jpn J Appl Phys, Part 1 1998, V37, P2079 CAPLUS
(10) Yamada, N; Jpn J Appl Phys, Part 1 1987, V26, P61
(11) Yamada, N; Jpn J Appl Phys, Part 1 1998, V37, P2104 CAPLUS

L8 ANSWER 16 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:155975 CAPLUS
DN 137:39248
ED Entered STN: 01 Mar 2002
TI Studies on microstructures and ***optical*** properties of phase change ***optical*** ***disc*** recording material based on Sb-Se and Ge-Sb- ***Te***
AU Chen, Zhi-wu; Qiao, Cheng-li; Zhang, Xi-yan; Ying, Zhagn
CS Department of Materials Science and Engineering, Xiamen University, Xiamen, 361005, Peop. Rep. China
SO Xiamen Daxue Xuebao, Ziran Kexueban (2002), 41(1), 54-59
CODEN: HMHHAF; ISSN: 0438-0479
PB Xiamen Daxue
DT Journal
LA Chinese
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB This paper systematically studies the structural transformation and optical properties of the Sb-Se-based and Ge-Sb- ***Te*** -based phase-change amorphous films before and after the phase changes, by using X-ray diffractometer and spectrometer. The results of the ***X*** -ray ***diffraction*** show that cryst. peaks of Sb appear after SbSe and SbSe2 amorphous films are annealed, and eutectic peak of Sb2Se3 appears after stoichiometric Sb2Se3 amorphous film is annealed. During the annealing of GeSb2Te4 amorphous film, the metastable fcc phase is formed first, and then it is transformed into the stable hex phase when the annealing temp. increased. For GeSb4Te4, similar transformations happen during its annealing process, and moreover, the cryst. peak of Sb also appears. The results of the spectrometer prove show that Sb-Se-based amorphous films do not have satisfactory light stabilities, as their reflectivities change too fast with the changes of the wavelength. The Ge-Sb- ***Te*** -based films have relatively high reflectivities at any wavelength segment, and possess ideal light stabilities in amorphous state, with no major changes in their reflectivities as the wavelength changes.
ST erasable phase change ***optical*** ***disk*** ; antimony selenide glass antimony germanium telluride glass
IT Telluride glasses
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(antimony germanium telluride glass; microstructures and optical properties of phase change optical recording material based on Sb-Se and Ge-Sb- ***Te***)
IT Selenide glasses
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(antimony selenide glass; microstructures and optical properties of phase change optical recording material based on Sb-Se and Ge-Sb- ***Te***)
IT Erasable ***optical*** ***disks***
(microstructures and ***optical*** properties of phase change optical recording material based on Sb-Se and Ge-Sb- ***Te***)
IT 7440-56-4, Germanium, properties 13494-80-9, ***Tellurium*** , properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(antimony germanium telluride glass; microstructures and optical properties of phase change optical recording material based on Sb-Se and Ge-Sb- ***Te***)
IT 7440-36-0, Antimony, properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(antimony selenide glass or antimony germanium telluride glass; microstructures and optical properties of phase change optical recording material based on Sb-Se and Ge-Sb- ***Te***)
IT 7782-49-2, Selenium, properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(antimony selenide glass; microstructures and optical properties of phase change optical recording material based on Sb-Se and Ge-Sb- ***Te***)
IT 1315-05-5, Antimony selenide 12651-04-6, Antimony selenide (SbSe2)

58428-34-5, Antimony selenide (SbSe)
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(selenide glass; microstructures and optical properties of phase change optical recording material based on Sb-Se and Ge-Sb- ***Te***)

IT 16150-59-7, Germanium antimony telluride (GeSb2Te4) 364081-15-2, Antimony germanium telluride (Sb4GeTe4)
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(telluride glass; microstructures and optical properties of phase change optical recording material based on Sb-Se and Ge-Sb- ***Te***)

L8 ANSWER 17 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:145204 CAPLUS
DN 137:26049
ED Entered STN: 26 Feb 2002
TI Effects of Sb doping on optical and static recording properties of TeOx thin film
AU Li, Qinghui; Gan, Fuxi
CS Shanghai Inst. Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai, 201800, Peop. Rep. China
SO Guangzi Xuebao (2001), 30(11), 1421-1424
CODEN: GUXUED; ISSN: 1004-4213
PB Kexue Chubanshe
DT Journal
LA Chinese
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB Monolayer TeOx:Sb thin films were deposited on K9 glass substrates by vacuum vapor deposition. The structural, optical and static recording properties of the films were studied. It was found that the structure, reflectance spectra and optical consts. of the TeOx:Sb films were significantly different from those of the TeOx films. The TeOx:Sb films had good writing sensitivity and certain erasability. This kind of films have the potential for using as erasable ***optical*** storage ***medium*** .
ST erasable optical recording material ***tellurium*** oxide antimony dopant doping
IT Absorptivity
Doping
Optical reflection
Refractive index
(effects of Sb doping on optical and static recording properties of TeOx thin film)
IT ***X*** -ray ***diffraction***
(effects of Sb doping on optical and static recording properties of TeOx thin film studied by)
IT Optical recording materials
(erasable; effects of Sb doping on optical and static recording properties of TeOx thin film)
IT Vapor deposition process
(vacuum; effects of Sb doping on optical and static recording properties of TeOx thin film prepd. by)
IT 7446-07-3, ***Tellurium*** dioxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(TeOx thin film prepd. from)
IT 7440-36-0, Antimony, uses
RL: MOA (Modifier or additive use); USES (Uses)
(effects of Sb doping on optical and static recording properties of TeOx thin film)

L8 ANSWER 18 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:142140 CAPLUS
DN 136:332709
ED Entered STN: 22 Feb 2002
TI Structural and thermal analysis of a new phase-change optical memory material: Ag-Sb- ***Te***
AU Sharma, Yagya Deva; Bhatnagar, Chhavi; Bhatnagar, Promod K.
CS Department of Electronic Science, University of Delhi, New Delhi, 110 021, India

SO   Proceedings of SPIE-The International Society for Optical Engineering (2001), 4594(Design, Fabrication, and Characterization of Photonic Devices II), 489-497
     CODEN: PSISDG; ISSN: 0277-786X
PB   SPIE-The International Society for Optical Engineering
DT   Journal
LA   English
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB   Phase change ***optical*** recording ***disks*** show long thermal stability of the amorphous recording marks. The thermal anal. of Ag-Sb- ***Te*** material was studied using DTA and structural anal. of the material were studied by ***x*** -ray ***diffraction*** , SEM and TEM resp. The films were studied for both the cases: before and after annealing and the alloy could be used as a phase change optical memory material.
ST   thermal phase ***optical*** memory ***disk*** antimony silver ***tellurium***
IT   Annealing
     Optical ***disks***
     Thermal analysis
     Thermal stability
     X -ray ***diffraction***
       (structural and thermal anal. of new phase-change optical memory material contg. Ag-Sb- ***Te***)
IT   408306-47-8   408306-48-9   408306-49-0
     RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
       (structural and thermal anal. of new phase-change optical memory material contg. Ag-Sb- ***Te***)
RE.CNT 9   THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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(2) Chou, L; J J App Phys 1999, V38, P1614 CAPLUS
(3) Elliott, S; Physics of Amorphous Material 1992, P23
(4) Hirota, K; J Journal of Applied Physics 1998, V37, P37
(5) Kato, N; J J Appl Phys 1999, P1707 CAPLUS
(6) Maeda, Y; J J Appl Phys 1992, V31, P451 CAPLUS
(7) Mitsuhashi, Y; J J Appl Physics 1998, V37, P2079 CAPLUS
(8) Yamada, N; J J App Phys 1998, V37, P2104 CAPLUS
(9) Yamada, N; J Journal of Applied Physics 1987, V26, P61

L8   ANSWER 19 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN   2002:138505 CAPLUS
DN   137:13170
ED   Entered STN: 22 Feb 2002
TI   Structural analysis of a new phase change optical memory material: Ag-Sb- ***Te***
AU   Sharma, Yagya Deva; Bhatnagar, Promod K.
CS   Department of Electronic Science, University of Delhi, New Delhi, 110 021, India
SO   Proceedings of SPIE-The International Society for Optical Engineering (2001), 4602(Semiconductor Optoelectronic Device Manufacturing and Applications), 225-233
     CODEN: PSISDG; ISSN: 0277-786X
PB   SPIE-The International Society for Optical Engineering
DT   Journal
LA   English
CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
     Section cross-reference(s): 73
AB   Phase change ***optical*** recording ***disks*** using demonstrate long stability of the amorphous recording marks. Structural anal. of the material were studied by ***x*** -ray ***Diffraction*** (XRD), SEM and TEM resp. The films were studied for both the cases: before and after annealing and the alloy (Ag-Sb- ***Te***) could be used as a phase change optical memory material.
ST   structural phase change optical memory silver antimony ***tellurium*** material
IT   Annealing
       (effect of; structural anal. of a new phase change optical memory material: Ag-Sb- ***Te***)

IT Optical recording
Surface structure
X -ray ***diffraction***
(structural anal. of a new phase change optical memory material: Ag-Sb-***Te***)
IT 408306-47-8 408306-48-9 408306-49-0
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(structural anal. of a new phase change optical memory material: Ag-Sb-***Te***)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
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(1) Berry, R; Thin Film Technology 1968, P7
(2) Chou, L; J J App Phys 1999, V38, P1614 CAPLUS
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(4) Hirota, K; J Journal of Applied Physics 1998, V37, P37
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L8 ANSWER 20 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:49480 CAPLUS
DN 136:301678
ED Entered STN: 18 Jan 2002
TI New chalcogenide alloy as phase-change optical recording material
AU Sharma, Yagya Deva; Singh, Laxman; Bhatnagar, Promod K.
CS Department of Electronic Science, University of Delhi, New Delhi, 110 021, India
SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4453(Materials and Devices for Photonic Circuits II), 112-120
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
AB Phase change ***optical*** recording ***disks*** using chalcogenide alloy Ag-Sb- ***Te*** demonstrate long thermal stability of the amorphous recording marks. The crystn. process and nature of Ag-Sb- ***Te*** material were studied using DTA and ***x*** -ray ***Diffraction*** (XRD) resp. The films were studied for both the cases: before and after annealing and the alloy (Ag-Gb- ***Te***) can be used as a phase change optical memory material.
ST antimony silver ***tellurium*** chalcogenide alloy phase ***optical*** recording ***disk***
IT Annealing
Optical ***disks***
Optical memory devices
Optical recording materials
Thermal stability
X -ray ***diffraction***
(new chalcogenide alloy as phase-change optical recording material)
IT Chalcogenides
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(new chalcogenide alloy as phase-change optical recording material)
IT 408306-47-8 408306-48-9 408306-49-0
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(new chalcogenide alloy as phase-change optical recording material)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
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(1) Berry, R; Thin Film Technology 1968, P7
(2) Chou, L; J J App Phys 1999, V38, P1614 CAPLUS
(3) Elliott, S; Physics of Amorphous Material 1992, P23
(4) Hirota, K; J Journal of Applied Physics 1998, V37, P37
(5) Kato, N; J J Appl Phys P1707
(6) Maeda, Y; Single-Beam Overwrite With A New Erase Mode Of In3--Sb-Te2 Phase Change Optical Disks

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L8 ANSWER 21 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:789865 CAPLUS
DN 136:142494
ED Entered STN: 31 Oct 2001
TI Acceleration of crystallization speed by Sn addition to Ge-Sb- ***Te*** phase-change recording material
AU Kojima, Rie; Yamada, Noboru
CS Optical Disk Systems Development Center, Matsushita Electric Industrial Co., Ltd., Osaka, 570-8501, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (2001), 40(10), 5930-5937
CODEN: JAPNDE
PB Japan Society of Applied Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB It is shown that a quaternary Ge-Sn-Sb- ***Te*** phase-change recording material obtained by adding Sn to Ge-Sb- ***Te*** has a higher crystn. speed than Ge-Sb- ***Te*** , and gives a larger erase ratio than Ge-Sb- ***Te*** when film thickness is decreased. Static evaluations have shown that a 6-nm-thick quaternary material was crystd. by laser irradn. of 50 ns. Measurements carried out under the conditions of a wavelength of 405 nm, a linear speed of 8.6 m/s and a mark length of 0.294 .mu.m showed that the erase ratio of over 30 dB was obtained with the new compn. for a 6-nm-thick layer. A carrier-to-noise ratio (CNR) exceeding 50 dB was also obtained. It was concluded that these effects of Sn addn. which give rise to complete crystn. are brought about by abundant nucleation in the amorphous phase even in thin layers. It was confirmed by ***X*** -ray ***diffraction*** analyses that the new Ge-Sn-Sb- ***Te*** material has a single-phase-NaCl-type structure, like the conventional compns. of Ge-Sb- ***Te*** .
ST antimony germanium tin telluride phase change ***optical*** recording ***disk*** ; crystn speed acceleration antimony germanium telluride recording material disk
IT Crystallization
Optical ***disks***
X-ray diffractometry
(acceleration of crystn. speed by tin addn. to Ge-Sb- ***Te*** phase-change recording material)
IT Telluride glasses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(acceleration of crystn. speed by tin addn. to Ge-Sb- ***Te*** phase-change recording material)
IT Optical recording materials
(phase-change; acceleration of crystn. speed by tin addn. to Ge-Sb- ***Te*** phase-change recording material)
IT 1314-98-3, Zinc sulfide, uses 7631-86-9, Silica, uses 51845-89-7, Germanium nitride
RL: DEV (Device component use); USES (Uses)
(acceleration of crystn. speed by tin addn. to Ge-Sb- ***Te*** phase-change recording material)
IT 7440-31-5, Tin, uses
RL: MOA (Modifier or additive use); USES (Uses)
(acceleration of crystn. speed by tin addn. to Ge-Sb- ***Te*** phase-change recording material)
IT 389866-63-1 389866-65-3
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(acceleration of crystn. speed by tin addn. to Ge-Sb- ***Te*** phase-change recording material)
IT 12040-02-7, Tin telluride
RL: PRP (Properties)
(acceleration of crystn. speed by tin addn. to Ge-Sb- ***Te*** phase-change recording material in relation to)

IT 117958-28-8, Antimony germanium telluride (Sb2Ge4Te7) 389866-64-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(recording layer; acceleration of crystn. speed by tin addn. to Ge-Sb- ***Te*** phase-change recording material)
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AN 2001:784463 CAPLUS
DN 136:60419
ED Entered STN: 29 Oct 2001
TI Structural and optical properties of PLZT thin films deposited by pulsed laser deposition
AU Lancok, Jan; Jelinek, Miroslav; Escoubas, Ludovic; Flory, Francois
CS Institute of Physics, Academy of Sciences of the Czech Republic, Prague, 180 40, Czech Rep.
SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4397(Laser Physics and Applications), 305-308
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75
AB The ferroelec. Pb1-xLax(ZryTiz)(1- x/4)O3 (PLZT) (x is 0.09, yr is 0.65, z is 0.35) optical waveguiding thin films were prepd. on fused SiO2, (001) quartz, (0001) sapphire and CeO2 coated (11 02) sapphire substrates by pulsed laser deposition. X-ray 20 scans showed that the films are amorphous, highly pyrochlore <110> and highly <110> pseudocubic perovskite textured. The chem. compn. of the films was detd. by WDX and the influence of O partial pressure on the lead content was obsd. The optical waveguiding properties of the films were characterized using a rutile prism coupling method. The distinct m-lines of the guided ***TE*** and TM modes of the films were obsd. The refractive index measured by m-line technique reached value .apprx.2.2 at 633 nm wavelength, which is close to the PLZT bulk value. The films have transmittance of .apprx.70% at the wavelength 400 nm.
ST structural optical property PLZT thin film deposition laser deposition; lead lanthanum zirconate titanate refractive index
IT Vapor deposition process
(laser ablation; structural and optical properties of PLZT thin films deposited by pulsed laser deposition)
IT Refractive index
Surface structure
UV and visible spectra
X -ray ***diffraction***
(structural and optical properties of PLZT thin films deposited by pulsed laser deposition)
IT 7782-44-7, Oxygen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(deposition ***medium*** ; structural and ***optical*** properties of PLZT thin films deposited by pulsed laser deposition)
IT 7631-86-9, Silica, properties
RL: PRP (Properties)
(quartz or fused; structural and optical properties of PLZT thin films deposited by pulsed laser deposition)

IT 1306-38-3, Cerium dioxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(sapphire coated by; structural and optical properties of PLZT thin films deposited by pulsed laser deposition)
IT 1344-28-1, Alumina, uses
RL: NUU (Other use, unclassified); USES (Uses)
(sapphire substrate; structural and optical properties of PLZT thin films deposited by pulsed laser deposition)
IT 113959-78-7, Lanthanum lead titanium zirconium oxide (La0.09Pb0.91Ti0.35Zr0.65O3)
RL: PRP (Properties)
(structural and optical properties of PLZT thin films deposited by pulsed laser deposition)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L8 ANSWER 23 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:467236 CAPLUS
DN 135:296093
ED Entered STN: 28 Jun 2001
TI Deposition and characterization of Ge-Sb- ***Te*** layers for applications in optical data storage
AU Kyrsta, S.; Cremer, R.; Neuschutz, D.; Laurenzis, M.; Haring Bolivar, P.; Kurz, H.
CS Lehrstuhl fur Theoretische Huttenkunde, Rheinisch-Westfalische Technische Hochschule Aachen, Aachen, D-52056, Germany
SO Applied Surface Science (2001), 179(1-4), 55-60
CODEN: ASUSEE; ISSN: 0169-4332
PB Elsevier Science B.V.
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Ge-Sb- ***Te*** films for optical data storage applications were deposited by magnetron sputtering of sep. Ge, Sb, and ***Te*** targets on Si(1 1 1) wafers in a d.c. argon plasma. To investigate the influence of the chem. compn. of the phase change material on its optical properties, films with lateral compositional gradients of up to 30 at. % were deposited. The compn. and structure of the films were investigated by XPS, electron probe microanal. (EPMA) and ***x*** -ray ***diffraction*** on plain Si wafers, whereas the phase change velocity of Ge-Sb- ***Te*** as a rewritable ***optical*** data storage ***medium*** was detd. on Si/Al/SiO2/Ge-Sb- ***Te*** multilayers near to tech. conditions. The phase change of Ge-Sb- ***Te*** films was induced and characterized with a static tester consisting of an optical microscope with an integrated high power laser diode. The change in reflectivity induced by the laser pulses was measured by a high sensitivity photodetector. Depending on the compn., the crystn. time was detd. between 220 and 500 ns, while the amorphization time was between 20 and 120 ns.
ST optical data storage phase change germanium antimony ***tellurium***
IT Amorphization
Crystallization
(deposition and characterization of Ge-Sb- ***Te*** layers for applications in rewritable phase-change optical data storage)
IT Optical recording materials
(rewritable, phase-change; deposition and characterization of Ge-Sb- ***Te*** layers for applications in rewritable phase-change optical data storage)
IT 7440-36-0, Antimony, properties 7440-56-4, Germanium, properties 13494-80-9, ***Tellurium*** , properties 16150-49-5, Germanium antimony telluride(Ge2Sb2Te5)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(deposition and characterization of Ge-Sb- ***Te*** layers for applications in rewritable phase-change optical data storage)
IT 7429-90-5, Aluminum, properties 7440-21-3, Silicon, properties 7631-86-9, Silica, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(multilayer contg.; deposition and characterization of Ge-Sb- ***Te*** layers for applications in rewritable phase-change optical data storage)
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
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AN 2001:434161 CAPLUS
DN 135:217689
ED Entered STN: 15 Jun 2001
TI Optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser
AU Li, Qinghui; Hou, Lisong; Li, Jinyan; Xie, Quan; Gan, Fuxi; Liu, Ning
CS Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Shanghai, 201800, Peop. Rep. China
SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4085(Optical Storage (ISOS 2000)), 133-136
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74

AB Monolayer Ag-In- ***Te*** -Sb-O thin films were deposited by reactive RF-sputtering using Ag8In14Te55Sb23 alloy target in a mixed Ar-O plasma at different partial pressure ratio of O to Ar (PO2/PAr). The optical properties of these films were studied. Films deposited at PO2/PAr of 2 to .apprx.4% had comparatively large absorption in the wavelength range of 400-650 nm. After annealing at 300.degree. for 30 min under protection of Ar, the reflectivity in the wavelength range of 500-700 nm could rise by .apprx.18-25%. The optical consts. (n,k) also changed much after heat treatment. XRD analyses indicated that the changes were attributed to the crystn. of Sb. The reflectivity contrast can be .ltoreq.20% after being recorded using short-wavelength laser beam (514.4 nm) with low writing power (10 mW) and short pulse width (100 ns). The film also exhibits certain erasability. This kind of films possess the potentially for use in high d. optical storage.

ST optical property silver indium ***tellurium*** antimony oxide; static recording oxide laser radiation
IT Reflection spectra
(UV-visible; optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)
IT Optical recording
(contrast for; optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)
IT Annealing
(effect of; optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)
IT Absorptivity
Refractive index
X -ray ***diffraction***
(optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)
IT UV and visible spectra
(reflection; optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)
IT 7440-37-1, Argon, uses 7782-44-7, Oxygen, uses

RL: NUU (Other use, unclassified); USES (Uses)
(deposition ***medium*** ; ***optical*** properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)

IT 7440-74-6P, Indium, properties
RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)
(monolayer film contg. Ag, ***Te*** , Sb and O; optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)

IT 13494-80-9P, ***Tellurium*** , properties
RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)
(monolayer film contg. In, Ag, Sb and O; optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)

IT 7440-36-0P, Antimony, properties
RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)
(monolayer film contg. In, ***Te*** , Ag and O; optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)

IT 7440-22-4P, Silver, properties
RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)
(monolayer film contg. In, ***Te*** , Sb and O; optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)

IT 358680-37-2
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(optical properties and static recording performances of Ag-In- ***Te*** -Sb-O films using short-wavelength laser)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L8 ANSWER 25 OF 75 CAPLUS

AN 2001:424347 CAPLUS

DN 135:160278

ED Entered STN: 13 Jun 2001

TI Crystallization of Ag-In-Sb- ***Te*** phase-change optical recording films

AU Chou, Lih-Hsin; Chang, Yem-Yeu; Chai, Yeong-Cherng; Wang, Shiunn-Yeong

CS Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, 300, Taiwan

SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (2001), 40(5A), 3375-3376
CODEN: JAPNDE; ISSN: 0021-4922

PB Japan Society of Applied Physics

DT Journal

LA English

CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 73, 74

AB Cryst. phases formed on thermally annealed and laser-annealed Ag12.4In3.8Sb55.2Te28.6 four-element alloy films are different. After 1 h isothermal annealing at 190-450.degree., hexagonal Sb and chalcopyrite AgInTe2 phases were obsd., whereas laser annealing by initialization at laser power >2.86 mW/.mu.m2 yielded cubic cryst. Sb and AgSbTe2 phases. There was only one exothermic peak at 170.degree. detd. by DSC measurement. Only the hexagonal Sb phase was obsd. by ***x*** -ray ***diffraction*** of samples subjected to DSC measurement. These exptl. results suggest that the activation energy for crystn. derived from Kissinger's equation using DSC data may not be the same as that for crystn. during erasing of phase-change ***optical*** recording ***disks*** .

ST crystn silver indium antimony telluride optical recording film

IT Annealing
Crystallization
Crystallization kinetics
Laser annealing
Optical recording
(crystn. and activation energy for crystn. of Ag-In-Sb- ***Te*** phase-change optical recording films by isothermal annealing and laser annealing)
IT 149663-33-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(crystn. and activation energy for crystn. of Ag-In-Sb- ***Te*** phase-change optical recording films by isothermal annealing and laser annealing)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L8 ANSWER 26 OF 75 CAPLUS
AN 2001:55988 CAPLUS
DN 134:245163
ED Entered STN: 24 Jan 2001
TI Microstructure and structure of Sb-Se-based and Ge-Sb- ***Te*** - based phase change ***optical*** ***disc*** recording ***media***
AU Chen, Zhibin; Zhang, Xiyan
CS Department of Material Engineering, Southwest Jiaotong University, Chengdu, 610031, Peop. Rep. China
SO Gaojishu Tongxun (2000), 10(10), 77-78
CODEN: GTONE8; ISSN: 1002-0470
PB Gaojishu Tongxun Zazhishe
DT Journal
LA Chinese
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Sb-Se and Ge-Sb- ***Te*** serial alloys were prepd. by smelting method. Their microstructure and structure were studied by ***X*** -ray ***diffraction*** . The microstructure of alloys was homogeneous. There was Sb or Se pptn. in non-stoichiometric compn. of Sb-Se series alloys, but eutectic Sb2Se3 alloy was formed in the stoichiometric compns. of Sb-Se series alloys. There was Sb pptn. in non-stoichiometric compns. of Ge-Sb-Tb series alloys, but the eutectic GeSb2Te4 was formed in stoichiometric compns. of Ge-Sb-Tb serial alloys.
ST antimony selenium alloy microstructure ***optical*** ***disk*** ; germanium antimony ***tellurium*** alloy microstructure ***optical*** ***disk*** ; recording ***medium*** ***optical*** ***disk***
IT Microstructure
(microstructure and structure of Sb-Se-based and Ge-Sb- ***Te*** -based phase-change ***optical*** ***disk*** recording ***media***)
IT ***Optical*** ***disks***
Optical recording materials
(phase-change; microstructure and structure of Sb-Se-based and Ge-Sb- ***Te*** -based phase-change ***optical*** ***disk*** recording ***media***)
IT 1315-05-5, Antimony selenide (Sb2Se3) 16150-59-7, Antimony germanium telluride Sb2GeTe4 105779-12-2, Antimony 40, selenium 60 (atomic) 132913-91-8, Antimony 28.6, germanium 14.3, ***tellurium*** 57.1 (atomic)
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(microstructure and structure of Sb-Se-based and Ge-Sb- ***Te*** -based phase-change ***optical*** ***disk*** recording

media)

L8 ANSWER 27 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:400149 CAPLUS
ED Entered STN: 16 Jun 2000
TI Crystal structure of GeTe and Ge2Sb2Te5 meta-stable phase
AU Nonaka, T.; Ohbayashi, G.; Toriumi, Y.; Mori, Y.; Hashimoto, H.
CS Electronic & Imaging Materials Research Laboraitories, Toray Industries, Inc., Otsu, Shiga, 520-8558, Japan
SO Thin Solid Films (2000), 370(1,2), 258-261
CODEN: THSFAP; ISSN: 0040-6090
PB Elsevier Science S.A.
DT Journal
LA English
AB Direct ***X*** -ray ***diffraction*** measurement of the erased state of the Ge-Sb- ***Te*** recording layer in a four-layered phase change ***optical*** ***disk*** , which was produced by an ***optical*** ***disk*** drive, was performed. It was identified as an fcc crystal structure. In order to carry out the detailed crystal structure anal. by the powder ***X*** -ray ***diffraction*** method with Rietveld refinements, somewhat larger amt. of the fcc crystal powder was prepd. from deposited 10 .mu.m thick films. It revealed that Ge2Sb2Te5 belongs to the NaCl type structure (Fm3m) with the 4a site including 20% vacancies. The conclusion was supported by the results of the d. measurements with Grazing Incidence of X-ray Reflectivity.
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(8) Petrov, I; Sov Phys Cryst 1968, V13, P339
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L8 ANSWER 28 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:177499 CAPLUS
DN 132:300839
ED Entered STN: 19 Mar 2000
TI Study of the superlattice-like phase change ***optical*** recording ***disks***
AU Chong, Tow Chong; Shi, Lu Ping; Miao, Xiang Shui; Tan, Pik Kee; Zhao, Rong; Cai, Zhong Ping
CS Data Storage Institute, Singapore, 117608, Singapore
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (2000), 39(2B), 737-740
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Superlattice-like phase-change ***optical*** ***disks*** , where the recording layer consists of alternating thin layers with two different phase change materials of GeTe and Sb2Te3, have been fabricated. The optical and thermal properties were simulated and measured. Samples were measured by ***x*** -ray ***diffraction*** (XRD) after annealing. The peaks of Ge2Sb2Te5 were obsd., which indicates that Ge2Sb2Te5 was formed at the interface between GeTe and Sb2Te3. The recording, erasing and overwriting properties were investigated. The signal differentiation in writing, reading and erasing was obsd. at the pulse width of 7 ns, which indicates that the superlattice-like structure can effectively shorten the crystn. time. The overwriting cycle was measured using a static tester. Within 10000 times no significant change in the modulation amplitude was obsd.
ST recording erasing overwriting ***optical*** ***disk*** superlattice antimony germanium ***tellurium***
IT Erasable ***optical*** ***disks***
(phase-change; superlattice-like phase change ***optical***

recording ***disks*** with recording layer from different phase change materials of GeTe and Sb2Te3 and its erasing and overwriting properties and interfacial formation of Ge2Sb2Te5)
IT Optical recording
Thermal properties
X -ray ***diffraction***
(superlattice-like phase change ***optical*** recording ***disks*** with recording layer from different phase change materials of GeTe and Sb2Te3 and its erasing and overwriting properties and interfacial formation of Ge2Sb2Te5)
IT Telluride glasses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(superlattice-like phase change ***optical*** recording ***disks*** with recording layer from different phase change materials of GeTe and Sb2Te3 and its erasing and overwriting properties and interfacial formation of Ge2Sb2Te5)
IT 132913-92-9, Germanium 2, antimony 2, ***tellurium*** 5 (atomic)
RL: DEV (Device component use); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process); USES (Uses)
(superlattice-like phase change ***optical*** recording ***disks*** with recording layer from different phase change materials of GeTe and Sb2Te3 and its erasing and overwriting properties and interfacial formation of Ge2Sb2Te5)
IT 1327-50-0, Antimony telluride(Sb2Te3) 7440-36-0, Antimony, processes 7440-56-4, Germanium, processes 12067-31-1, Antimony telluride(SbTe) 13494-80-9, ***Tellurium*** , processes 122561-66-4, Antimony 40, ***tellurium*** 60 (atomic)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(superlattice-like phase change ***optical*** recording ***disks*** with recording layer from different phase change materials of GeTe and Sb2Te3 and its erasing and overwriting properties and interfacial formation of Ge2Sb2Te5)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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(2) Chen, G; Appl Phys Lett 1997, V71, P2761 CAPLUS
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AN 2000:177497 CAPLUS
DN 132:286237
ED Entered STN: 19 Mar 2000
TI New additional layer to realize initialization-free function for digital versatile disk-random access memory disk

AU Miao, X. S.; Chong, T. C.; Shi, L. P.; Tan, P. K.; Li, F.
CS Data Storage Institute, Singapore, 119260, Singapore

SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (2000), 39(2B), 729-732
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics

DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB Digital versatile disk-random access memory (DVD-RAM) with the Sb2Te3 addnl. layer demonstrated the initialization-free function. The results of the reflectivity, ***x*** -ray ***diffraction*** (XRD) and differential scanning calorimeter (DSC) confirmed the initialization-free function. No significant decrease of the modulation amplitude after 1000 overwriting cycles was obsd. A reduced time was required for complete

erasure.
ST   digital versatile disk random access memory disk
IT   ***Optical***   ***disks***
        (DVD, RAM; digital versatile   ***disk*** -random access memory with
        Sb2Te3 addnl. layer)
IT   Telluride glasses
     RL: DEV (Device component use); USES (Uses)
        (antimony telluride; digital versatile disk-random access memory with
        Sb2Te3 addnl. layer)
IT   1314-98-3, Zinc sulfide, uses   1327-50-0, Antimony telluride(Sb2Te3)
     7440-36-0, Antimony, uses   7631-86-9, Silica, uses   13494-80-9,
     Tellurium , uses   87715-69-3
     RL: DEV (Device component use); USES (Uses)
        (digital versatile disk-random access memory with Sb2Te3 addnl. layer)
RE.CNT 8   THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L8   ANSWER 30 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN   1999:305962 CAPLUS
DN   131:65788
ED   Entered STN: 19 May 1999
TI   Large potential of Sb100-xTex films for optical storage

AU   Arun, P.; Vedeshwar, A. G.
CS   Department of Physics and Astrophysics, University of Delhi, Delhi, 110
     007, India

SO   Materials Research Bulletin (1999), 34(2), 203-216
     CODEN: MRBUAC; ISSN: 0025-5408
PB   Elsevier Science Inc.
DT   Journal
LA   English

CC   74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)

AB   As-grown microcryst. stoichiometric Sb40Te60 films were examd. by
     heat-treatment and laser-irradn. expts. for their potential use in optical
     storage. Compositional, structural, and optical studies were carried out
     for films heat-treated at various temps. in the range 0-260.degree.C.
     They revealed a stable phase (Sb60Te40) in the range 110-185.degree.C and
     a monotonic decrease of   ***Te***   below and above this range. The
     irradn. expt. showed the possibility of both reversible and irreversible
     phase changes depending on the laser power. Comparing the two expts., the
     authors believe the phase responsible for reversible changes is Sb100-xTex
     (x = 38-45). The irreversible changes were found to be due to large
     deviation in this stoichiometry.

ST   microcryst antimony   ***tellurium***   film optical storage
IT   Telluride glasses
     RL: PRP (Properties); TEM (Technical or engineered material use); USES
     (Uses)
        (antimony telluride; compositional and structural and optical
        properties of microcryst. stoichiometric Sb40Te60 films for reversible
        and irreversible phase-change optical storage)
IT   Optical absorption
     Optical recording materials
     X-ray photoelectron spectra
        (compositional and structural and optical properties of microcryst.
        stoichiometric Sb40Te60 films for reversible and irreversible
        phase-change optical storage)
IT   Erasable   ***optical***   ***disks***
     Optical memory devices
     Surface structure
       X -ray   ***diffraction***
        (compositional and structural and   ***optical***   properties of
        microcryst. stoichiometric Sb40Te60 films for reversible and
        irreversible phase-change optical storage in relation to)
IT   ***Optical***   ***disks***

(write-once read-many; compositional and structural and optical properties of microcryst. stoichiometric Sb40Te60 films for reversible and irreversible phase-change optical storage in relation to)
IT 1327-50-0, Antimony telluride(Sb2Te3) 7440-36-0, Antimony, properties 13494-80-9, ***Tellurium*** , properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(compositional and structural and optical properties of microcryst. stoichiometric Sb40Te60 films for reversible and irreversible phase-change optical storage)
RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L8 ANSWER 31 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:20509 CAPLUS
DN 130:189287
ED Entered STN: 12 Jan 1999
TI Quantitative study of nitrogen doping effect on cyclability of Ge-Sb- ***Te*** phase-change ***optical*** ***disks***
AU Kojima, Rie; Kouzaki, Takashi; Matsunaga, Toshiyuki; Yamada, Noboru
CS Optical Disk Systems Division, Matsushita Electric Industrial Co., Ltd., Osaka, 570-8501, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (1998), 3401(Optical Data Storage '98), 14-23
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB By nitrogen doping into a Ge-Sb- ***Te*** phase change ***optical*** ***disk*** 's recording layer, we were able to significantly increase its cyclability. For example, our PD attained, at the max., 800,000 overwrite cycles through accurate control of nitrogen concn. We quantified the nitrogen concn. of recording layer using secondary ion mass spectrometry (SIMS) and detd., from the viewpoint of cyclability, signal amplitude and other parameters, the optimum concn. to be around 2 - 3 at.%. From analyses by thermal desorption mass spectrometry (TDMS) and ***x*** -ray ***diffraction*** (XD) using powder, we found: (1) nitrogen atoms are mainly bound with Ge to create an amorphous phase of Ge-N; (2) as long as the nitrogen concn. remains around 5 at.%, those Ge, Sb and ***Te*** atoms which are not bound with nitrogen form NaCl type crystals. We obtained the following model by combining the results of the above anal. Nitrogen-doped Ge-Sb- ***Te*** recording layer is composed of Ge-Sb- ***Te*** grains intermingled with a small quantity of amorphous Ge-N, which exists in the form of a thin film penetrating the grain boundary of Ge-Sb- ***Te*** . The Ge-N composing this high-melting-point material layer appears to suppress any micro-material-flow that may occur during overwrite.
ST nitrogen doping effect phase change ***optical*** ***disk*** ; germanium antimony telluride ***optical*** ***disk***
IT Doping

Optical ***disks***
(quant. study of N doping effect on cyclability of Ge-Sb- ***Te*** phase-change ***optical*** ***disks***)
IT 51845-89-7, Germanium nitride
RL: DEV (Device component use); FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative); USES (Uses)
(quant. study of N doping effect on cyclability of Ge-Sb- ***Te*** phase-change ***optical*** ***disks***)
IT 16150-49-5, Antimony germanium telluride (Sb2Ge2Te5) 214402-01-4, Antimony germanium nitride telluride
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(quant. study of N doping effect on cyclability of Ge-Sb- ***Te*** phase-change ***optical*** ***disks***)
IT 7727-37-9, Nitrogen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(quant. study of N doping effect on cyclability of Ge-Sb- ***Te*** phase-change ***optical*** ***disks***)
IT 59641-84-8, Nitrogen telluride (NTe) 143499-07-4, Antimony nitride
RL: PRP (Properties)
(quant. study of N doping effect on cyclability of Ge-Sb- ***Te*** phase-change ***optical*** ***disks***)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Kojima, R; Jpn J Appl Phys Part 1 1998, V37(4B) CAPLUS
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L8 ANSWER 32 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:448175 CAPLUS
DN 129:154622
ED Entered STN: 20 Jul 1998
TI Characterization of Ge-Sb- ***Te*** films for phase-change optical memory
AU Park, Sung-jin; Lee, Soonil; Oh, Soo-ghee; Kim, Won Mok; Cheong, Byung-ki; Chung, Moonkyo; Kim, Soon Gwang
CS Dep. Physics, Ajou Univ., Suwon, 442-749, S. Korea
SO Ungyong Mulli (1998), 11(3), 359-364
CODEN: HMHMEY; ISSN: 1013-7009
PB Korean Physical Society
DT Journal
LA Korean
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Ge-Sb- ***Te*** , the most widely used active recording-layer material for phase-change ***optical*** ***disks*** , films were deposited on glass (Corning 7059) substrates by using medium-frequency (40 kHz) magnetron sputtering, and the optical properties and the structure of these films were examd. Our investigation showed that all the as-deposited Ge-Sb- ***Te*** films had an amorphous structure and that their optical consts. were similar, regardless of the sputtering power. However, considerable changes in both the structure and the optical consts. of these films were induced by annealing. In particular, a prominent increase in the extinction coeff. over the measured photon-energy range, and slight increase in the refractive index below a photon energy of 1.6 eV with a decrease in other photon-energy ranges were obsd. In addn., the energy gap produced by a Tauc's plot was found to decrease dramatically after annealing. From the ***x*** -ray ***diffraction*** and Raman scattering spectra, we found that these changes in the optical properties of the Ge-Sb- ***Te*** films were concomitant with the appearance of features attributable to the cryst. phases of these films.
ST germanium antimony ***tellurium*** optical memory recording; phase change optical recording
IT Optical constants
Optical recording materials
Raman spectra
Sputtering
X -ray ***diffraction***
(characterization of Ge-Sb- ***Te*** recording films for phase-change optical memory)

IT 7440-36-0, Antimony, properties 7440-56-4, Germanium, properties
13494-80-9, ***Tellurium*** , properties 87715-69-3
RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(characterization of Ge-Sb- ***Te*** recording films for
phase-change optical memory)

L8 ANSWER 33 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:325700 CAPLUS
DN 129:60512
ED Entered STN: 03 Jun 1998
TI PdGeSbTe alloy for phase change optical recording
AU Hirota, Kusato; Ohbayashi, Gentaro
CS Electronic Imaging Materials Res. Labs., Toray Industries, Inc., Shiga,
520, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes &
Review Papers (1998), 37(4A), 1847-1851
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 56, 75
AB Phase change ***optical*** recording ***disks*** using a Pd-Ge-Sb-
Te quaternary alloy demonstrated high crystn. speed and long-term
thermal stability of the amorphous recording marks. This alloy film can
be crystd. by a short duration laser pulse of less than 100 ns. It is
applicable to a single beam overwrite optical recording system. The
crystd. portion of this recording layer on the disk is assigned to single
phase and polycryst. face-centered-cubic (fcc.) crystals by transmission
electron diffraction. A small amt. of Pd atoms (typically 0.2 to 3 at.%)
in this alloy improve the thermal stability of amorphous marks.
ST palladium germanium antimony ***tellurium*** optical recording;
crystal structure quaternary alloy optical recording; ***disk***
optical quaternary alloy
IT Crystal structure
Crystallization
Optical recording
X -ray ***diffraction***
(PdGeSbTe alloy for phase change optical recording)
IT 200724-54-5
RL: DEV (Device component use); USES (Uses)
(PdGeSbTe alloy for phase change optical recording)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(7) Yamada, N; Proc Int Symp Optical Memory 1987, Jpn J Appl Phys 1987,
V26(Suppl 26-4), P61
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L8 ANSWER 34 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:722951 CAPLUS
DN 128:55298
ED Entered STN: 17 Nov 1997
TI Reliability of the phase change ***optical*** ***disk***
AU Hirota, Kusato; Ohbayashi, Gentaro
CS Toray Industries, Inc., Electronic and Imaging Materials Research
Laboratories, Otsu, 520, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes &
Review Papers (1997), 36(10), 6398-6402
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)

Section cross-reference(s): 56
AB Thermal stability of the Al-alloy reflective layer is essential for the archival life of a rewritable phase change ***optical*** ***disk*** . The new Al-Hf-Pd alloy reflective layer provides excellent thermal stability. A disk using this Al-alloy and a Pd-Ge-Sb- ***Te*** alloy recording layer is extremely stable. The bit-error-rate (BER) of the recorded signal did not change substantially after an acceleration test of 6,800 h under the conditions of 90.degree., 80% RH. ***X*** -ray ***diffraction*** anal. showed that the new additive components (Hf, Pd) of the Al-alloy prevented the growth of the Al crystals.
ST phase change ***optical*** ***disk*** reliability; aluminum hafnium palladium alloy ***optical*** ***disk*** ; reflector aluminum alloy crystn ***optical*** ***disk*** ; thermal stability aluminum alloy ***optical*** ***disk***
IT Aging, materials
Erasable ***optical*** ***disks***
(aluminum alloy reflective layer compn. effect on reliability of phase change ***optical*** ***disks***)
IT Polycarbonates, uses
RL: DEV (Device component use); USES (Uses)
(substrate; reliability of phase change ***optical*** ***disk*** contg.)
IT 1314-98-3, Zinc sulfide, uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(dielec. layer; reliability of phase change ***optical*** ***disk*** contg.)
IT 200128-20-7
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(recording layer; reliability of phase change ***optical*** ***disk*** contg.)
IT 200128-21-8
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(reflective layer; thermally unstable reflective layer for phase change ***optical*** ***disk***)
IT 174779-74-9
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(thermally stable reflective layer for phase change ***optical*** ***disk***)
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Hirota, K; Ext Abstr 50th Autumn Meet 1989, Pt 3, P944
(3) Ohbayashi, G; Proc 3rd Symp Phase Change Recording 1991, P33

L8 ANSWER 35 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:562374 CAPLUS
DN 113:162374
ED Entered STN: 27 Oct 1990
TI Optical properties of sputtered ***tellurium*** oxide thin films
AU Lu, Jiafu; Yu, Daiwei; Fang, Ziyao
CS Shanghai Inst. Ceramics, Acad. Sin., Shanghai, Peop. Rep. China
SO Wuji Cailiao Xuebao (1990), 5(2), 112-19
CODEN: WCXUET; ISSN: 1000-324X
DT Journal
LA Chinese
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB ***Te*** -O thin films are very promising as reversible ***optical*** recording ***media*** . Such films were prepd. by rf-diode sputtering technique, and the optical properties, such as trasmissivity, reflectance, absorption coeff., optical gap, ***x*** -ray ***diffraction*** characteristics, and Raman spectra were measured before and after heat treatment. The relation between the optical properties and the film compn. and the structural characteristics of the films are discussed.
ST ***tellurium*** oxide optical property recording
IT Optical property
(of ***tellurium*** oxide sputtered thin films)
IT Recording materials
(optical, ***tellurium*** oxide sputtered thin films, properties of)
IT 7446-07-3, ***Tellurium*** oxide

RL: USES (Uses)
(optical properties of sputtered thin films of, for recording)

L8 ANSWER 36 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:560824 CAPLUS
DN 111:160824
ED Entered STN: 28 Oct 1989
TI Local structures and annealing behavior of amorphous ***tellurium*** -carbon alloys prepared by radio-frequency sputtering
AU Tsunetomo, Keiji; Sugishima, Tatsumi; Imura, Takeshi; Osaka, Yukio; Sakai, Hiroshi
CS Dep. Electr. Eng., Hiroshima Univ., Higashi-Hiroshima, 724, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1989), 28(4), 671-7
CODEN: JAPNDE; ISSN: 0021-4922
DT Journal
LA English
CC 65-7 (General Physical Chemistry)
Section cross-reference(s): 73, 75
AB The local structures and annealing behavior of amorphous TexC1-x films (x = 0.1, 0.17 and 0.51) prepd. by radio-frequency sputtering were investigated to examine the possibility of ***optical*** recording ***media*** . Optical absorption, ***x*** -ray ***diffraction*** , Raman scattering, and TEM were measured. Amorphous TexC1-x films consist of amorphous ***Te*** clusters .apprx.30 .ANG. in diam. embedded in amorphous C. Moessbauer spectroscopy of 125Te and 129I was also applied to these alloy films to elucidate the local environment of the ***Te*** atom. The interaction between ***Te*** chains in the amorphous clusters is weak compared to that in the cryst. ***Te*** and decreases with decreasing ***Te*** content.
ST structure local ***tellurium*** carbide amorphous film; annealing ***tellurium*** carbide amorphous film; sputtering ***tellurium*** carbide amorphous film; optical property ***tellurium*** carbide amorphous film
IT Sputtering
(in ***tellurium*** carbide amorphous film prepn.)
IT Moessbauer effect
Optical absorption
Raman spectra
(of ***tellurium*** carbide amorphous films)
IT Crystallization
(of ***tellurium*** carbide amorphous films, during annealing)
IT Clusters
(of ***tellurium*** , in ***tellurium*** carbide amorphous films)
IT Recording materials
(optical, ***tellurium*** carbide amorphous films, sputtering and properties of)
IT 123011-25-6, Carbon telluride (C0.85Te0.15) 123011-26-7, Carbon telluride (C0.97Te0.03) 123011-27-8, Carbon telluride (C0.2Te0.8) 123034-11-7, Carbon telluride (C0.6Te0.4)
RL: PRP (Properties)
(annealing behavior and local structure of amorphous films of)
IT 123011-28-9P, Carbon telluride (C0.51Te0.49) 123011-29-0P, ***Tellurium*** carbide (te0.17C0.83) 123011-30-3P, ***Tellurium*** carbide (te0.1C0.9)
RL: PREP (Preparation)
(annealing behavior and local structure of amorphous, prepd. by sputtering)

L8 ANSWER 37 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:431208 CAPLUS
DN 111:31208
ED Entered STN: 21 Jul 1989
TI Effect of germanium addition on gallium-selenium- ***tellurium*** system erasable ***optical*** recording ***media***
AU Nakau, Tanehiro; Matsushita, Tatsuhiko; Suzuki, Akio
CS Coll. Eng., Osaka Sangyo Univ., Osaka, Japan
SO Osaka Sangyo Daigaku Sangyo Kenkyusho Shoho (1988), 11, 153-72
CODEN: OSDSEF; ISSN: 0388-2624
DT Journal
LA Japanese

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB A reversible ***optical*** storage ***medium*** with >104 write/erase cycles was realized using Te0.8 (Ga0.15 Se0.85)0.2 + 5 wt.% Ge film (.apprx.1500 .ANG.). An erase time of 0.12 .mu.s was obtained for this compn. of 2.16 eV. A peak temp. of 162.degree. of the exothermic curve and an activation energy of 2.16 eV from Kissinger's plot were obtained by using a differential scanning calorimeter. Peaks of ***Te*** (100), GeSe, GeTe4, ***Te*** (101) crystallines were identified using ***x*** -ray ***diffraction*** . An erase time 0.25 .mu.s was obtained for the compn. of Te0.7 (Ge0.33 Se0.67)0.3. Crystn. kinetics were discussed using the Avrami equation.
ST optical recording gallium germanium chalcogenide; selenium gallium germanium optical recording; ***tellurium*** gallium germanium optical recording
IT Recording materials
 (optical, write-erase cycles of gallium-germanium-selenium- ***tellurium***)
IT 119848-88-3 119848-89-4 119848-90-7 119848-91-8 119848-92-9
 119848-93-0 119848-94-1 119848-95-2 119848-96-3 119848-97-4
 119848-98-5 119848-99-6 119849-00-2 119849-01-3 119849-02-4
 119849-03-5 119849-04-6 119849-06-8 119849-07-9 119849-08-0
 119849-09-1 119849-10-4 119866-55-6 120142-20-3
 RL: USES (Uses)
 (optical recording material, write-erase cycles in relation to)

L8 ANSWER 38 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:449385 CAPLUS
DN 107:49385
ED Entered STN: 08 Aug 1987
TI Effect of germanium addition on gallium-selenium- ***tellurium*** system reversible ***optical*** recording ***media***
AU Matsushita, Tatsuhiko; Suzuki, Akio; Nakau, Tanehiro; Okuda, Masahiro; Rhee, Jung Chul; Naito, Hiroyoshi
CS Coll. Eng., Osaka Ind. Univ., Osaka, 574, Japan
SO Japanese Journal of Applied Physics, Part 2: Letters (1987), 26(1), L62-L64
 CODEN: JAPLD8
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB A reversible ***optical*** storage ***medium*** capable of >104 write/erase cycles was realized using a Te0.8(Ga0.05Se0.95)0.2 + 5 wt% Ge film (.apprx.1000 .ANG.). For this compn., a peak temp. of an exothermic curve of 156.degree. and an activation energy from Kissinger's plot of 2.24 eV were obtained using a differential scanning calorimeter. In this film, a peak of GeTe crystal was identified by ***x*** -ray ***diffraction*** . To investigate changes of the film surface induced through an annealing (200.degree. + 100 mW/cm2Xe, .apprx.1 min), a high resoln. SEM observation was carried out; while cracks preventing the high reversibility of write/erase cycles were generated for the GeTe film, the cracks were not recognized for the Te0.8(Ga0.05Se0.95)0.2 + 5 wt% Ge film.
ST gallium selenium ***tellurium*** germanium recording; optical recording ***tellurium*** selenium gallium
IT Recording materials
 (optical, reversible, gallium-selenium- ***tellurium*** films, germanium addn. effect on characteristics of)
IT 109150-45-0
 RL: USES (Uses)
 (optical recording film contg. gallium, germanium addn. effect on characteristics of)
IT 109150-42-7
 RL: USES (Uses)
 (optical recording film, for reversible process, characteristics of)
IT 109150-41-6
 RL: USES (Uses)
 (optical recording gallium contg. film, germanium addn. effect on properties of)
IT 7440-56-4, Germanium, uses and miscellaneous
 RL: USES (Uses)
 (optical recording gallium-selenium- ***tellurium*** system contg.)

IT 7440-55-3, Gallium, uses and miscellaneous
RL: USES (Uses)
(optical recording ***tellurium*** -selenium film contg., germanium addn. effect on properties of)

L8 ANSWER 39 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:129185 CAPLUS
DN 106:129185
ED Entered STN: 17 Apr 1987
TI ***Tellurium*** -germanium-tin-gold phase change recording film for ***optical*** ***disk***
AU Yamada, Noboru; Takao, Masatoshi; Takenaga, Mutsuo
CS Cent. Res. Lab., Matsushita Electr. Ind. Co., Ltd., Osaka, 570, Japan
SO Proceedings of SPIE-The International Society for Optical Engineering (1986), 695(Opt. Mass Data Storage 2), 79-85
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB ***Te*** -Ge-Sn-Au thin films were studied for phase change type rewritable disk media, in order to obtain the fast crystn. speed and the thermal stability. Films were prepd. by co-evapn. method. The threshold crystg. pulse duration of Te60Ge4Sn11Au25 film was only 1 .mu.sec at 2 mW of laser power; that is less than one tenth compared with that of Te80Ge5Sn15 film, while the threshold amorphizing laser power of them were almost the same, 6 mW at 0.2 .mu.sec of pulse duration regardless of Au concn. Its crystn. temp. of .apprx.130.degree. was enough to maintain the good thermal stability. Through differential scanning calorimetry, ***x*** -ray and electron ***diffraction*** studies, the first appearing cryst. state in crystn. process, corresponding to the drastic change in optical property, showed only one phase of metastable simple cubic (SC) structure. The appearance of the SC structure made the crystn. speed higher. The obtained thin film was a candidate for the simultaneously erasable and recordable material.
ST ***tellurium*** germanium tin gold recording; ***optical*** ***disk*** phase change film
IT Recording materials
(optical, phase-change, ***tellurium*** -germanium-tin-gold film for disks for)
IT 107334-54-3
RL: USES (Uses)
(crystn. speed and transition temps. of, effect of gold on, for ***optical*** recording ***disk*** prepn.)
IT 7440-57-5, Gold, properties
RL: PROC (Process)
(effect of, on crystg. speed and transition temps. of ***tellurium*** -germanium-tin film, for ***optical*** ***disk*** prepn.)
IT 107334-53-2
RL: USES (Uses)
(thermal and structural anal. of film of, for ***optical*** recording ***disk***)

L8 ANSWER 40 OF 75 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:38966 CAPLUS
DN 106:38966
ED Entered STN: 07 Feb 1987
TI Nanosecond pulsed laser-induced segregation of ***tellurium*** in ***tellurium*** oxide films
AU Lee, W. Y.; Coufal, H.; Davis, C. R.; Jipson, V.; Lim, G.; Parrish, W.; Sequeda, F.; Davis, R. E.
CS Almaden Res. Cent., IBM, San Jose, CA, 95120-6099, USA
SO Journal of Vacuum Science & Technology, A: Vacuum, Surfaces, and Films (1986), 4(6), 2988-92
CODEN: JVTAD6; ISSN: 0734-2101
DT Journal
LA English
CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 74
AB Thin films of TeOx deposited by coevapn. of ***Te*** and TeO2 or by reactive sputtering of ***Te*** in the presence of Ar and O2 are amorphous as-deposited and are spatially homogeneous mixts. of ***Te***

and TeO2. Irradn. of these films by a nanosecond laser pulse leads to a substantial change in the optical properties (e.g., increase in the reflectivity) of the films. Electron spectroscopy for chem. anal. depth profiling, Rutherford backscattering, and ***x*** -ray ***diffraction*** techniques were used to analyze these films before and after laser irradn. The results obtained indicated that the segregation of ***Te*** from TeO2 matrix is responsible for most of the obsd. optical property changes. The segregation of ***Te*** results in the formation of a nearly pure ***Te*** layer in the hot region of the film without changing the overall film compn. A model based on melting of ***Te*** and TeO2 composites followed by segregation and crystn. of ***Te*** is proposed to describe the nanosecond pulsed-laser irradn. of TeOx thin films. The possible effects of ***Te*** segregation on the ***optical*** recording characteristics of TeOx based ***media*** are also discussed.

ST segregation ***tellurium*** surface oxide film; laser induced segregation nanosecond pulse; ***optical*** recording ***tellurium*** oxide ***media***

IT Recording materials
  (***tellurium*** oxide films, nanosecond pulsed-laser irradn. effects on)

IT 7446-07-3
  RL: PRP (Properties)
  (surface segregation of ***tellurium*** in films of, nanosecond pulsed laser-induced)

IT 13494-80-9, ***Tellurium*** , properties
  RL: PRP (Properties)
  (surface segregation of, in ***tellurium*** oxide films, nanosecond pulsed laser-induced)

L8 ANSWER 41 OF 75 CAPLUS

AN 1983:43281 CAPLUS

DN 98:43281

ED Entered STN: 12 May 1984

TI Thermal changes of optical properties observed in some suboxide thin films

AU Ohta, Takeo; Takenaga, Mutsuo; Akahira, Nobuo; Yamashita, Tadaoki

CS Mater. Res. Lab., Matsushita Electr. Ind. Co., Ltd., Moriguchi, Japan

SO Journal of Applied Physics (1982), 53(12), 8497-500
  CODEN: JAPIAU; ISSN: 0021-8979

DT Journal

LA English

CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB Suboxide thin films of SbOx, TeOx, MoOx, and GeOx (x is smaller than the stoichiometric value for each component) were found to have the property of showing a crit. change in their absorption coeffs. and refractive indexes at elevated temps. The thin-film samples were prepd. by evapg. a mixt. of the stoichiometric oxide powder and a deoxidization metal powder such as W. The crit. temps. of these thin films are 150, 120, 150, and 280.degree., resp. The absorption coeffs. before and after the heat treatment are 2.5 .times. 104 (before) and 6.1 .times. 104 (after), 8 .times. 104 and 1.0 .times. 105, 5.6 .times. 103 and 1.1 .times. 104 and 1.8 .times. 105 cm-1, resp. Their refractive indexes are 1.8 (before) and 1.9 (after), 3.1 and 3.5, 1.8 and 2.1, and 2.5 and 2.8, resp. As detd. by ***x*** -ray ***diffraction*** anal., these thin films are composed of very small metal grains and stoichiometric oxide grains. The thermal changes accompanied by the optical const. changes are mainly due to structural changes in the metal grains. These thin films are concluded to have the feasibility of application to ***optical*** ***disk*** memories of the ***laser*** heat-mode type.

ST thermooptical property suboxide film; antimony suboxide thermooptical property; ***tellurium*** suboxide thermooptical property; molybdenum suboxide thermooptical property; germanium suboxide thermooptical property

IT Optical absorption
  (by suboxide thin films, temp. effects on)

IT Thermooptical effect
  (of suboxide thin films)

IT Optical property
  (of suboxide thin films, temp. effects on)

IT 12281-27-5D, oxygen-deficient 13451-17-7D, oxygen-deficient
  18868-43-4D, oxygen-deficient 20619-16-3D, oxygen-deficient
  RL: PRP (Properties)

(optical properties of films of, thermal effects on)

L8 ANSWER 42 OF 75 INSPEC (C) 2006 IEE on STN
AN 2005:8684493 INSPEC
TI In situ ***X*** -ray ***diffraction*** study of crystallization process of GeSbTe thin films during heat treatment.
AU Kato, N.; Konomi, I.; Seno, Y.; Motohiro, T. (Toyota Central R&D Labs. Inc., Aichi, Japan)
SO Applied Surface Science (15 May 2005) vol.244, no.1-4, p.281-4. 7 refs.
Doc. No.: S0169-4332(04)01789-1
Published by: Elsevier
CODEN: ASUSEE ISSN: 0169-4332
SICI: 0169-4332(20050515)244:1/4L.281:SDSC;1-K
DT Journal
TC Experimental
CY Netherlands
LA English
AB The crystallization processes of the Ge2Sb2Te5 thin film used for PD and DVD-RAM were studied in its realistic ***optical*** ***disk*** film configurations for the first time by ***X*** -ray ***diffraction*** using an intense ***X*** -ray beam of a synchrotron orbital radiation facility (SPring-8) and in situ quick detection with a Position-Sensitive-Proportional-Counter. The dependence of the amorphous-to-fcc phase-change temperature T1 on the rate of temperature elevation Ret gave an activation energy Ea: 0.93eV much less than previously reported 2.2eV obtained from a model sample 25-45 times thicker than in the real ***optical*** ***disks*** . The similar measurement on the Ge4Sb1Te5 film whose large reflectance change attains the readability by CD-ROM drives gave Ea: 1.13eV with larger T1 than Ge2Sb2Te5 thin films at any Ret implying a lower sensitivity in erasing as well as a better data stability of the phase-change disk. [All rights reserved Elsevier].
CC A6855 Thin film growth, structure, and epitaxy; A8140G Other heat and thermomechanical treatments; A4270Y Other optical materials; B4110 Optical materials; B4120 Optical storage and retrieval
CT ANTIMONY ALLOYS; CD-ROMS; CHALCOGENIDE GLASSES; CRYSTALLISATION; DIGITAL VERSATILE DISCS; GERMANIUM ALLOYS; HEAT TREATMENT; OPTICAL MATERIALS; RANDOM-ACCESS STORAGE; SEMICONDUCTOR THIN FILMS; ***TELLURIUM*** ALLOYS; ***X*** -RAY ***DIFFRACTION***
ST ***X-ray diffraction*** ; crystallization; thin films; heat treatment; DVD-RAM; ***optical disk film*** ; X-ray beam; synchrotron orbital radiation facility; position sensitive proportional counter; phase-change temperature; reflectance; CD-ROM drive; data stability; amorphous structure; Ge2Sb2Te5
CHI Ge2Sb2Te5 ss, Ge2 ss, Sb2 ss, Te5 ss, Ge ss, Sb ss, Te ss
ET In; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; GeSbTe; Ge cp; cp; Sb cp; Te cp; Ge2Sb2Te5; Ge4Sb1Te5; Ge2Sb2Te; Ge; Sb; Te

L8 ANSWER 43 OF 75 INSPEC (C) 2006 IEE on STN
AN 2005:8467748 INSPEC DN A2005-15-6470K-021; B2005-08-4120-001
TI Effects of the Sb2Te3 crystallization-induced layer on crystallization behaviors and properties of phase change ***optical*** ***disk*** .
AU Wei Hsiang Wang; Li Chun Chung; Cheng Tzu Kuo (Dept. of Mater. Sci. & Eng., Nat. Chiao Tung Univ., Hsinchu, Taiwan)
SO Surface & Coatings Technology (30 Jan. 2004) vol.177-178, p.795-9. 7 refs.
Published by: Elsevier
Price: CCCC 0257-8972/2004/$30.00
CODEN: SCTEEJ ISSN: 0257-8972
SICI: 0257-8972(20040130)177/178L.795:ESCI;1-4
Conference: 30th International Conference on Metallurgical Coatings and Thin Films. San Diego, CA, USA, 28 April-2 May 2003
DT Conference Article; Journal
TC Practical; Theoretical; Experimental
CY Switzerland
LA English
AB The conventional phase-change ***optical*** ***disk*** is generally fabricated by the sputtering process, which has a drawback of requiring an initialization process to change the as-deposited recording layer in the disk from amorphous to crystalline phases before the disk can be used for reading or writing. In order to develop an initialization-free process, the Sb2Te3 alloy was used as an additional layer below or above the recording Ge2Sb2Te5 layer to study its effect on crystallization

behaviors of the recording layer. The layer structures were deposited on substrates of Si wafer, Cu-mesh to examine crystal structure (XRD), amorphous-to-crystal transformation (DSC) and microstructure (TEM). The complete disk specimens were prepared on PC board to measure their dynamic properties, such as reflectivity, jitter and modulation (dynamic tester); and to examine the effects of laser pulse duration time, position and thickness of Sb2Te3 layer on static reflectivity of the disk (static tester), where Avrami coefficient 'q' in J-M-A rate equation can be derived. The results show that effect of Sb2Te3, layer is essentially to induce crystallization of Ge2Sb2Te5 recording layer from (110) plane of Sb2Te3 crystals. This is due to the fact that the crystallization temperature of Sb2Te3 crystal is 85 degrees C below that of Ge2Sb2Te5 crystal, in addition to a lower lattice mismatch between two crystals. This is in agreement with the J-M-A kinetic analyses that the rate controlling step for amorphous-crystal transformation in disk specimens with Sb2Te3 layer over 15-nm thickness is mainly governed by nucleation with q=2.53-2.79>2.5 in J-M-A equation. Regarding the effects of Sb2Te3 layer on disk properties, the results show that under the 10 nm Ge2Sb2Te5 layer thickness, the Sb2Te3-assisted disks with lower Sb2Te3 layer thickness between 13 and 20 nm show the best combination of reflectivity and modulation. The most important advantage of this process is that the Sb2Te3-assisted disks require no initialization process, because the as-deposited disks can be directly written and erased.

CC A6470K Solid-solid transitions; A6480G Microstructure; A6855 Thin film growth, structure, and epitaxy; A4280T Optical storage and retrieval; A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A8170G Nondestructive testing: optical methods; A7865M Optical properties of amorphous and glassy semiconductors and insulators (thin films/low-dimensional structures); A6140D Structure of glasses; B4120 Optical storage and retrieval; B0590 Materials testing; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning

CT ANTIMONY COMPOUNDS; CHALCOGENIDE GLASSES; CRYSTAL MICROSTRUCTURE; CRYSTALLISATION; DIFFERENTIAL SCANNING CALORIMETRY; DYNAMIC TESTING; GERMANIUM COMPOUNDS; JITTER; KINETIC THEORY; NUCLEATION; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL MODULATION; PHASE CHANGE MATERIALS; REFLECTIVITY; SEMICONDUCTOR THIN FILMS; ***TELLURIUM*** COMPOUNDS; TRANSMISSION ELECTRON MICROSCOPY; ***X*** -RAY ***DIFFRACTION***

ST ***phase change optical disk*** ; sputtering process; amorphous-crystalline phase transformation; recording layer structures; Si wafer substrate; crystal structure; XRD; microstructure; TEM; PC board; static reflectivity; jitter; Avrami coefficient; crystallization temperature; lattice mismatch; J-M-A rate equation; ***optical disk*** *** properties*** ; recording layer thickness; laser pulse modulation; nucleation; optical reading; optical writing; Sb2Te3 alloy; recording Ge2Sb2Te5 layer; Cu-mesh substrate; DSC; dynamic testing; (110) plane; J-M-A kinetic analysis; 10 nm; 13 to 20 nm; Sb2Te3Ge2Sb2Te5; Si; Cu

CHI Sb2Te3Ge2Sb2Te5 int, Ge2 int, Sb2 int, Te3 int, Te5 int, Ge int, Sb int, Te int, Sb2Te3Ge2Sb2Te5 ss, Ge2 ss, Sb2 ss, Te3 ss, Te5 ss, Ge ss, Sb ss, Te ss; Si sur, Si el; Cu sur, Cu el

PHP size 1.0E-08 m; size 1.3E-08 to 2.0E-08 m

ET Sb*Te; Sb sy 2; sy 2; Te sy 2; Sb2Te3; Sb cp; cp; Te cp; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge2Sb2Te5; Ge cp; Si; Cu; J; C; Sb2Te3Ge2Sb2Te5; Sb2Te3Ge2Sb2Te; Ge; Sb; Te

L8 ANSWER 44 OF 75 INSPEC (C) 2006 IEE on STN

AN 2005:8378749 INSPEC DN A2005-11-6855-080; B2005-06-4120-009

TI TeOx thin films for write-once ***optical*** recording ***media*** .

AU Qinghui Li; Donghong Gu; Fuxi Gan (Shanghai Inst. of Opt. & Fine Mech., Chinese Acad. of Sci., China)

SO Journal of Materials Science & Technology (2004) vol.20, no.6, p.678-80. 16 refs.
Published by: Editorial Board J. Mater. Sci. & Technol
CODEN: JSCTEQ ISSN: 1005-0302
SICI: 1005-0302(2004)20:6L.678:TTFW;1-X

DT Journal

TC Experimental

CY China

LA English

AB TeOx thin films were prepared by vacuum evaporation of TeO2 powder. Structural characteristic and surface morphology of the as-deposited films was analyzed by using X-ray photoelectron spectroscopy, transmission

electron microscopy, X-ray diffractometer and atomic force microscopy. It was found that the films represented a two-component system comprising ***Te*** particles dispersed in an amorphous TeO2 matrix. The dispersed ***Te*** particles were in a crystalline state. The TeOx films showed a finely granular structure and a rough surface. Results of the static recording test showed that the TeOx films had a good writing sensitivity for short-wavelength laser beam (514.5 nm). Primary results of the dynamic test at 514.5 nm were also reported. The TeOx films were suitable for using as a blue-green wavelength high density ***optical*** storage ***medium*** .

CC A6855 Thin film growth, structure, and epitaxy; A6820 Solid surface structure; A4280T Optical storage and retrieval; A8170 Materials testing; A4280X Optical coatings; A6140 Structure of amorphous and polymeric materials; A7960E Photoelectron spectra of semiconductors and insulators; B4120 Optical storage and retrieval; B4110 Optical materials

CT AMORPHOUS STATE; ATOMIC FORCE MICROSCOPY; DYNAMIC TESTING; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; ROUGH SURFACES; SURFACE MORPHOLOGY; ***TELLURIUM*** COMPOUNDS; THIN FILMS; TRANSMISSION ELECTRON MICROSCOPY; VACUUM DEPOSITED COATINGS; WRITE-ONCE STORAGE; ***X*** -RAY ***DIFFRACTION*** ; X-RAY PHOTOELECTRON SPECTRA

ST TeOx thin films; ***write once optical recording media*** ; vacuum evaporation; TeO2 powder; structural properties; surface morphology; X-ray photoelectron spectroscopy; transmission electron microscopy; X-ray diffractometry; atomic force microscopy; ***dispersed Te particles*** ; two component system; amorphous TeO2 matrix; crystalline state; finely granular structure; rough surface; static recording test; writing sensitivity; short wavelength laser beam; dynamic test; ***blue-green*** *** wavelength high density optical storage medium*** ; 514.5 nm; TeOx

CHI TeO sur, Te sur, O sur, TeO bin, Te bin, O bin

PHP wavelength 5.145E-07 m

ET O*Te; TeOx; Te cp; cp; O cp; TeO2; Te; TeO; O

L8 ANSWER 45 OF 75 INSPEC (C) 2006 IEE on STN

AN 2004:8229057 INSPEC DN A2005-03-6180B-014; B2005-02-4120-010

TI Mechanisms of initialization of doped Sb- ***Te*** phase-change media.

AU Towlson, S.J.; Elwell, C.A. (Dept. of Mater. Sci. & Metall., Cambridge Univ., UK); Davies, C.E.; Greer, A.L.

SO Advanced Data Storage Materials and Characterization Techniques Symposia (Mater. Res. Soc. Symposium Proceedings Vol.803)
Editor(s): Ahner, J.W.; Levy, J.; Hesselink, L.; Mijiritskii, A.
Warrendale, PA, USA: Mater. Res. Soc, 2004. p.213-18 of xi+280 pp. 16 refs.
Conference: Boston, MA, USA, 1-4 Dec 2003
ISBN: 1-55899-741-5

DT Conference Article

TC Experimental

CY United States

LA English

AB Laser initialization of the chalcogenide ***optical*** -recording ***medium*** Ag-In-Sb- ***Te*** is investigated using transmission electron microscopy of the resulting microstructure. Initialization beam power and velocity are varied. The average inhomogeneous strain of the chalcogenide is estimated from X-ray peak broadening. At high power and low velocity a clearly defined columnar grain structure with low strain is produced, typical of directional solidification. At low power and high velocity the initialized structure has a high density of defects and high strain, this is attributed to crystallization from the amorphous rather than the liquid state. The beam power and linear velocity of laser initialization may therefore be used to control the microstructure.

CC A6180B Ultraviolet, visible and infrared radiation effects; A6480G Microstructure; A6140D Structure of glasses; A8130F Solidification; A4280T Optical storage and retrieval; A4270C Optical glass; A6470K Solid-solid transitions; B4120 Optical storage and retrieval; B4110 Optical materials; B2520F Amorphous and glassy semiconductors; B0570 Glasses (engineering materials science)

CT ANTIMONY COMPOUNDS; CHALCOGENIDE GLASSES; CRYSTALLISATION; DIRECTIONAL SOLIDIFICATION; INDIUM COMPOUNDS; LASER BEAM EFFECTS; NONCRYSTALLINE DEFECTS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL GLASS; SILVER COMPOUNDS; ***TELLURIUM*** COMPOUNDS; TRANSMISSION ELECTRON MICROSCOPY; ***X*** -RAY ***DIFFRACTION***

ST doped SbTe phase-change media; laser initialization; ***chalcogenide*** *** optical-recording medium*** ; transmission electron microscopy;

microstructure; beam power; inhomogeneous strain; X-ray peak broadening; columnar grain structure; defects; crystallization; amorphous state; liquid state; directional solidification; AgInSbTe
CHI AgInSbTe ss, Ag ss, In ss, Sb ss, Te ss
ET Sb*Te; Sb sy 2; sy 2; Te sy 2; Sb-Te; Ag*In*Sb*Te; Ag sy 4; sy 4; In sy 4; Sb sy 4; Te sy 4; Ag-In-Sb-Te; SbTe; Sb cp; cp; Te cp; AgInSbTe; Ag cp; In cp; Ag; In; Sb; Te

L8 ANSWER 46 OF 75 INSPEC (C) 2006 IEE on STN
AN 2004:7870813 INSPEC DN A2004-07-6550-001
TI Thermodynamic parameters, microstructures and optical properties of Sb-Se-based and Ge-Sb- ***Te*** -based phase change ***optical*** ***disc*** recording ***media*** .
AU Chen Zhiwu (Dept. of Mater. Sci. & Eng., Xiamen Univ., China); Hu Qiaosheng; Zhang Ying; Cheng Xuan; Zhang Xiyan
SO Acta Metallurgica Sinica (July 2003) vol.39, no.7, p.775-80. 10 refs.
Published by: Science Press
CODEN: CHSPA4 ISSN: 0412-1961
SICI: 0412-1961(200307)39:7L.775:TPMO;1-7
DT Journal
TC Experimental
CY China
LA Chinese
AB Thermodynamic parameters, the structural transformation and optical properties before and after the phase transforms of amorphous films of Sb-Se-based and Ge-Sb- ***Te*** -based phase change ***optical*** ***disk*** recording ***media*** were studied by using DSC, ***X*** -ray ***diffraction*** and spectrometer. The results show that Sb-Se-based alloys in amorphous state have not a satisfactory light stability, as its reflectivity changes significantly fast with the change of the wavelength. The Ge-Sb- ***Te*** alloys with two compositions have a relatively high reflectivity at any wavelength segment, and possess an ideal light stability in amorphous state, no obvious change occurs in their reflectivity with the changes of the wavelength.
CC A6550 Thermodynamic properties and entropy; A6480G Microstructure; A7820 Optical properties of condensed matter; A6140 Structure of amorphous and polymeric materials; A4280T Optical storage and retrieval; A6470K Solid-solid transitions
CT AMORPHOUS STATE; ANTIMONY ALLOYS; CRYSTAL MICROSTRUCTURE; DIFFERENTIAL SCANNING CALORIMETRY; GERMANIUM ALLOYS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL PROPERTIES; SELENIUM ALLOYS; SOLID-STATE PHASE TRANSFORMATIONS; SPECTROMETERS; ***TELLURIUM*** ; THERMODYNAMICS; ***X*** -RAY ***DIFFRACTION***
ST thermodynamic parameters; microstructures; optical properties; recording media; ***phase change optical disc*** ; structural transformation; amorphous films; differential scanning calorimetry; DSC; ***x-ray*** *** diffraction*** ; spectrometer; light stability; GeSbTe; SbSe
CHI GeSbTe ss, Ge ss, Sb ss, Te ss; SbSe sur, Sb sur, Se sur, SbSe bin, Sb bin, Se bin
ET Sb*Se; Sb sy 2; sy 2; Se sy 2; Sb-Se; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge-Sb-Te; GeSbTe; Ge cp; cp; Sb cp; Te cp; SbSe; Se cp; Ge; Sb; Te; Se

L8 ANSWER 47 OF 75 INSPEC (C) 2006 IEE on STN
AN 2003:7559945 INSPEC DN A2003-08-4270-007; B2003-04-4110-061
TI Study of the crystallization behavior of Ag-In-Sb- ***Te*** phase change optical recording film.
AU Mongia, G.; Bhatnagar, P.K. (Dept. of Electron. Sci., Univ. of Delhi, New Delhi, India)
SO Optical Engineering (Jan. 2003) vol.42, no.1, p.148-50. 7 refs.
Published by: SPIE
Price: CCCC 0091-3286/2003/42(1)/148/3/$15.00
CODEN: OPEGAR ISSN: 0091-3286
SICI: 0091-3286(200301)42:1L.148:SCBP;1-I
DT Journal
TC Application; Experimental
CY United States
LA English
AB Recently the demand for high-speed and high-density ***optical*** recording ***media*** using a direct overwrite scheme is very high. Among some of the potential candidates, the AgInSbTe alloy appears to be one of the promising materials that has drawn worldwide attention. It can

give direct overwrite capability within a short period of time and is reported to give a well-defined shape with sharp edges, leading to intrinsically lower jitter values, thereby increasing the linear density. Hence, considerable interest has been focused on the study of the crystallization behavior of AgInSbTe alloy. Different crystalline phases are observed due to thermal annealing of AgInSbTe four-element alloy films. Results of the ***x*** -ray ***diffraction*** analysis of amorphous and crystalline (AgSbTe) ***x*** (In1-ySby)1- ***x*** films with x=0.2, 0.4 and y=0.7, deposited by thermal evaporation technique are presented. The difference in crystallization behavior of the crystalline phases formed after 1 h of isothermal annealing at temperature between 200 and 400 degrees C are studied through ***x*** -ray ***diffraction*** analysis. The experimental results are presented for a composition close to eutectic Sb69Te31 in which some of the ***Te*** is replaced by Ag and In. The results indicate that the growth of the crystalline phases depends on the annealing temperature and it is also affected by the change in the composition.

CC A4270Y Other optical materials; A6140D Structure of glasses; A4280X Optical coatings; A4280T Optical storage and retrieval; B4110 Optical materials; B0570 Glasses (engineering materials science); B4120 Optical storage and retrieval

CT ANNEALING; CHALCOGENIDE GLASSES; CRYSTALLISATION; INDIUM COMPOUNDS; JITTER; OPTICAL FILMS; OPTICAL STORAGE; SILVER COMPOUNDS; ***X*** -RAY ***DIFFRACTION***

ST crystallization behavior; ***Ag-In-Sb-Te phase change optical recording*** *** film*** ; direct overwrite scheme; jitter; linear density; thermal annealing; ***x-ray diffraction analysis*** ; amorphous films; crystalline films; thermal evaporation technique; annealing temperature; 200 to 400 degC; AgInSbTe

CHI AgInSbTe ss, Ag ss, In ss, Sb ss, Te ss

PHP temperature 4.73E+02 to 6.73E+02 K

ET Ag*In*Sb*Te; Ag sy 4; sy 4; In sy 4; Sb sy 4; Te sy 4; Ag-In-Sb-Te; AgInSbTe; Ag cp; cp; In cp; Sb cp; Te cp; (AgSbTe)x(In1-ySby)1-x; C; Sb*Te; Sb sy 2; sy 2; Te sy 2; Sb69Te31; Te; Ag; In; Sb

L8 ANSWER 48 OF 75 INSPEC (C) 2006 IEE on STN

AN 2003:7536642 INSPEC DN A2003-07-4280T-001; B2003-04-4120-001; C2003-04-5320K-001

TI New quaternary material for high-speed phase-change optical recording.

AU Mongia, G.; Bhatnagar, P.K. (Dept. of Electron. Sci., Univ. of Delhi, New Delhi, India)

SO Proceedings of the SPIE - The International Society for Optical Engineering (2002) vol.4768, p.136-43. 8 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/02/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2002)4768L.136:QMHS;1-N
Conference: Novel Optical Systems Design and Optimization V. Seattle, WA, USA, 9 July 2002
Sponsor(s): SPIE

DT Conference Article; Journal

TC Experimental

CY United States

LA English

AB Over recent years the demand for mass storage devices with high speed has become increasingly more evident. Phase change optical recording is based on the rapid crystalline to amorphous (and vice versa) transition in a thin phase change layer enabled by laser induced heating. Among some of the potential candidates, AgInSbTe alloy appears to be one of the latest promising materials that has drawn world wide attention. The ***optical*** ***disk*** of this material with overwrites cyclability of more than 105 times, and data rate 22Mbps has been reported for DVD 4.7GB. Using this material as the active layer has other advantages such as the problem of material flow is reduced to a great extent. Moreover the marks written in AgInSbTe based media have a well defined shape with sharp edges, leading to intrinsically lower jitter values than observed for GeSbTe based media. In the present work [(AgSbTe)x(In1-ySby)1-x] alloy and films are developed for different values of x and y. The crystallization process of Ag-In-Sb- ***Te*** films with above composition is systematically reported and compared for the first time. Thermal properties of the alloy and film are studied using ***X*** -ray ***diffraction*** (XRD) technique. The analysis of the

film is done before annealing and also after 1hr of isothermal annealing at temperature between 200 degrees C and 500 degrees C. The structural analysis of the film is also done under same conditions (before and after annealing) using scanning electron microscope (SEM) respectively. The experimental results of the analysis are presented here for compositions close to the eutectic Sb69Te31, in which some of the ***Te*** is replaced by Ag and In.

CC A4280T Optical storage and retrieval; A8130H Constant-composition solid-solid phase transformations: polymorphic, massive, and order-disorder; A6470K Solid-solid transitions; B4120 Optical storage and retrieval; C5320K Optical storage

CT ANTIMONY ALLOYS; INDIUM ALLOYS; ***OPTICAL*** ***DISC*** STORAGE; SCANNING ELECTRON MICROSCOPY; SILVER ALLOYS; SOLID-STATE PHASE TRANSFORMATIONS; TERBIUM ALLOYS; ***X*** -RAY ***DIFFRACTION***

ST quaternary material; high-speed phase-change optical recording; mass storage devices; rapid crystalline to amorphous transition; thin phase change layer; laser induced heating; AgInSbTe alloy; overwrites cyclability; DVD; material flow; marks; sharp edges; intrinsically lower jitter values; ***X-ray diffraction*** ; crystallization process; thermal properties; annealing; isothermal annealing; SEM; eutectic Sb69Te31; scanning electron microscope; ***optical disc storage*** ; (AgSbTe)x(In1-y Sby)1-x alloy films; ***Ag-In-Sb-Te films*** ; 200 to 500 degC; 4.7 GB; AgInSbTe; (AgSbTe)x(In1-ySby)1-x; Sb69Te31

CHI AgInSbTe ss, Ag ss, In ss, Sb ss, Te ss; AgSbTeInSb ss, Ag ss, In ss, Sb ss, Te ss; Sb69Te31 bin, Sb69 bin, Te31 bin, Sb bin, Te bin

PHP temperature 4.73E+02 to 7.73E+02 K; memory size 5.0E+09 Byte

ET Ag*In*Sb*Te; Ag sy 4; sy 4; In sy 4; Sb sy 4; Te sy 4; AgInSbTe; Ag cp; cp; In cp; Sb cp; Te cp; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; GeSbTe; Ge cp; Sb*Te; Sb sy 2; sy 2; Te sy 2; SbTe; In*Sb; In sy 2; (In1-ySby)1-x]; Ag-In-Sb-Te; C; Sb69Te31; Te; Ag; In; (AgSbTe)x(In1-y Sby)1-x; (AgSbTe)x(In1-ySby)1-x; Sb; AgSbTeInSb; Sb69Te

L8 ANSWER 49 OF 75 INSPEC (C) 2006 IEE on STN

AN 2003:7530268 INSPEC DN A2003-06-8130B-004

TI Crystallization study of Ag-In-Sb- ***Te*** optical recording film.

AU Mongia, G.; Bhatnagar, P.K. (Dept. of Electron. Sci., Delhi Univ., India)

SO Proceedings of the SPIE - The International Society for Optical Engineering (2002) vol.4863, p.121-8. 6 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/02/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2002)4863L.121:CSOR;1-M
Conference: Java/Jini Technologies and High-Performance Pervasive Computing. Boston, MA, USA, 30 July-1 Aug 2002
Sponsor(s): SPIE

DT Conference Article; Journal

TC Experimental

CY United States

LA English

AB The demand for high speed and high-density ***optical*** recording ***media*** using a direct overwrite scheme is very high. Among potential candidates, AgInSbTe alloy appears to be a promising material, attracting worldwide attention. ***Optical*** ***disks*** of this material with overwrite cyclability of more than 105 times and data rate 22 Mbps have been reported for DVD of 4.5 GB. Results of ***X*** -ray ***diffraction*** analysis of amorphous and crystalline (AgSbTe) ***x*** (In1-ySby)1- ***x*** films (x= 0.2, 0.4 and y= 0.7) deposited by thermal evaporation are presented. The difference in crystallization behavior of the crystalline phases formed after 1 hr of thermal annealing between 200-400 degrees C are studied through ***X*** -ray ***diffraction*** analysis. The optical band gap of the aforementioned amorphous and crystalline films were also calculated from transmittance spectra. It is observed that transmittivity increases by about 20% to give significant contrast between amorphous and crystalline marks. This relative change in transmittivity also varies with chemical composition. The results show that as the annealing temperature is increased, the film becomes more crystalline and with a lower value of x, i.e. with x=0.2 better results are obtained. These results were also confirmed through microstructural analysis of the films, involving surface detail using SEM. It has been observed that grain size depends on the annealing temperature as well as on the composition.

CC A8130B Phase diagrams of metals and alloys; A7865E Optical properties of

metals and metallic alloys (thin films/low-dimensional structures); A6855 Thin film growth, structure, and epitaxy; A7820D Optical constants and parameters (condensed matter); A8140G Other heat and thermomechanical treatments

CT ANNEALING; ANTIMONY ALLOYS; CRYSTALLISATION; DIGITAL VERSATILE DISCS; INDIUM ALLOYS; METALLIC THIN FILMS; OPTICAL CONSTANTS; SCANNING ELECTRON MICROSCOPY; SILVER ALLOYS; ***TELLURIUM*** ALLOYS

ST ***high-speed high-density optical recording media*** ; direct overwrite scheme; ***Ag-In-Sb-Te optical recording film*** ; ***optical disks*** ; DVD; data rate; ***X-ray diffraction analysis*** ; crystalline (AgSbTe)x(In1-ySby)1-x films; amorphous (AgSbTe)x(In1-ySby)1-x films; thermal evaporation; crystallization; thermal annealing; optical band gap; transmittance spectra; microstructural analysis; surface details; SEM; grain size; 22 Mbit/s; 4.5 GB; 200 to 400 degC; AgInSbTe

CHI AgInSbTe ss, Ag ss, In ss, Sb ss, Te ss

PHP bit rate 2.2E+07 bit/s; memory size 4.8E+09 Byte; temperature 4.73E+02 to 6.73E+02 K

ET Ag*In*Sb*Te; Ag sy 4; sy 4; In sy 4; Sb sy 4; Te sy 4; Ag-In-Sb-Te; AgInSbTe; Ag cp; cp; In cp; Sb cp; Te cp; (AgSbTe)x(In1-ySby)1-; C; (AgSbTe)x(In1-ySby)1-x; Ag; In; Sb; Te

L8 ANSWER 50 OF 75 INSPEC (C) 2006 IEE on STN

AN 2002:7469368 INSPEC DN A2003-02-4280T-001; B2003-01-4120-007

TI Structural and thermal analysis of a new phase-change optical memory material: Ag-Sb- ***Te*** .

AU Sharma, Y.D.; Bhatnagar, C.; Bhatnagar, P.K. (Dept. of Electron. Sci., Univ. of Delhi, New Delhi, India)

SO Proceedings of the SPIE - The International Society for Optical Engineering (2001) vol.4594, p.489-97. 9 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/01/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2001)4594L.489:STAP;1-B
Conference: Design, Fabrication, and Characterization of Photonic Devices II. Singapore, 27-30 Nov 2001
Sponsor(s): SPIE; Nanyang Technol. Univ. (Singapore)

DT Conference Article; Journal

TC Experimental

CY United States

LA English

AB Phase change ***optical*** recording ***disks*** have been found to demonstrate long thermal stability of the amorphous recording marks. A thermal analysis of Ag-Sb- ***Te*** material was carried out by DTA and a structural analysis by ***x*** -ray ***diffraction*** , SEM and TEM respectively. The films were studied for both cases: before and after annealing, and it was concluded that the alloy could be used as a phase change optical memory material.

CC A4280T Optical storage and retrieval; A6140D Structure of glasses; A4270C Optical glass; B4120 Optical storage and retrieval; B4110 Optical materials

CT ANNEALING; ANTIMONY COMPOUNDS; CHALCOGENIDE GLASSES; DIFFERENTIAL THERMAL ANALYSIS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL GLASS; SCANNING ELECTRON MICROSCOPY; SILVER COMPOUNDS; STORAGE MEDIA; THERMAL STABILITY; TRANSMISSION ELECTRON MICROSCOPY; WRITE-ONCE STORAGE; ***X*** -RAY ***DIFFRACTION***

ST phase change optical memory material; thermal analysis; structural analysis; ***phase change optical recording disks*** ; long thermal stability; amorphous recording marks; DTA; ***X-ray diffraction*** ; scanning electron microscopy; transmission electron microscopy; SEM; TEM; XRD; annealing; CD-RW type; write-once type disks; ***Ag-Sb-Te***

CHI AgSbTe ss, Ag ss, Sb ss, Te ss

ET Ag*Sb*Te; Ag sy 3; sy 3; Sb sy 3; Te sy 3; Ag-Sb-Te; AgSbTe; Ag cp; cp; Sb cp; Te cp; Ag; Sb; Te

L8 ANSWER 51 OF 75 INSPEC (C) 2006 IEE on STN

AN 2002:7462456 INSPEC DN A2003-01-6480E-001; B2003-01-4110-005

TI Effect of compositional variation on properties of Ag-Sb- ***Te*** : a new optical memory material.

AU Sharma, Y.D.; Singh, L.; Panday, P.K.; Bhatnagar, C.; Bhatnagar, P.K. (Dept. of Electron. Sci., Univ. of Delhi, New Delhi, India)

SO Proceedings of the Eleventh International Workshop on the Physics of Semiconductor Devices (SPIE Vol.4746)

Editor(s): Kumar, V.; Basu, P.K.
Washington, DC, USA: SPIE, 2002. p.1372-5 vol.2 of 2 vol.(xxxix+xl+1460) pp. 3 refs.
Conference: Delhi, India, 11-15 Dec 2001
Sponsor(s): Defence Res. & Dev. Organ.; Ministr. Inf. Technol.; Dept. Sci. & Technol.; et al
ISBN: 0-8194-4500-2
DT Conference Article
TC Application; Experimental
CY United States
LA English
AB Phase change ***optical*** recording ***disks*** have been found to demonstrate long thermal stability of the amorphous recording marks. The crystallization process of Ag-Sb- ***Te*** material and its nature have been studied using Differential Thermal Analysis (DTA) and ***X*** -Ray ***Diffraction*** (XRD) respectively. The films were studied for both the cases: before and after annealing and it was concluded that the alloy Ag-Sb- ***Te*** could be used as a phase change optical memory material.
CC A6480E Stoichiometry and homogeneity; A6140D Structure of glasses; A4280T Optical storage and retrieval; A6470K Solid-solid transitions; A8140G Other heat and thermomechanical treatments; A4270G Light-sensitive materials; B4110 Optical materials; B4120 Optical storage and retrieval; B2520F Amorphous and glassy semiconductors; B0570 Glasses (engineering materials science); B2550A Annealing processes in semiconductor technology
CT ANNEALING; ANTIMONY COMPOUNDS; CHALCOGENIDE GLASSES; CRYSTALLISATION; DIFFERENTIAL THERMAL ANALYSIS; GLASS STRUCTURE; ***OPTICAL*** ***DISC*** STORAGE; SILVER COMPOUNDS; STOICHIOMETRY; THERMAL STABILITY; ***X*** -RAY ***DIFFRACTION***
ST compositional variation; ***Ag-Sb-Te*** ; optical memory material; ***phase change optical recording disks*** ; long thermal stability; amorphous recording marks; crystallization process; differential thermal analysis; DTA; ***X-ray diffraction*** ; XRD; annealing
CHI AgSbTe ss, Ag ss, Sb ss, Te ss
ET Ag*Sb*Te; Ag sy 3; sy 3; Sb sy 3; Te sy 3; Ag-Sb-Te; AgSbTe; Ag cp; cp; Sb cp; Te cp; Ag; Sb; Te

L8 ANSWER 52 OF 75 INSPEC (C) 2006 IEE on STN
AN 2002:7457669 INSPEC DN A2003-01-4280T-001; B2003-01-4120-001; C2003-01-5320K-001
TI Structural analysis of a new phase change optical memory material: Ag-Sb- ***Te*** .
AU Sharma, Y.D.; Bhatnagar, P.K. (Dept. of Electron. Sci., Univ. of Delhi South Campus, New Delhi, India)
SO Proceedings of the SPIE - The International Society for Optical Engineering (2001) vol.4602, p.225-33. 9 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/01/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2001)4602L.225:SAPC;1-D
Conference: Semiconductor Optoelectronic Device Manufacturing and Applications. Nanjing, China, 7-9 Nov 2001
Sponsor(s): SPIE; SEU-Southeast Univ.; COEMA-China Opt. & Optoelectron. Manuf. Assoc
DT Conference Article; Journal
TC New Development; Practical; Experimental
CY United States
LA English
AB Phase change ***optical*** recording ***disks*** using Ag-Sb- ***Te*** alloy have been found to demonstrate long stability of the amorphous recording marks. Structural analysis of the material was studied by ***X*** -ray ***diffraction*** (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM) respectively. The films were studied for both cases: before and after annealing, and it was concluded that the alloy could be used as a phase change optical memory material.
CC A4280T Optical storage and retrieval; A4270 Optical materials; A7820 Optical properties of condensed matter; A6110 X-ray determination of structures; A6116D Electron microscopy determinations of structures; B4120 Optical storage and retrieval; B4110 Optical materials; C5320K Optical storage
CT ANNEALING; ANTIMONY ALLOYS; ***OPTICAL*** ***DISC*** STORAGE;

OPTICAL MATERIALS; SCANNING ELECTRON MICROSCOPY; SILVER ALLOYS; STABILITY;
TELLURIUM ALLOYS; TRANSMISSION ELECTRON MICROSCOPY; ***X***
-RAY ***DIFFRACTION***
ST ***Ag-Sb-Te phase change optical memory material*** ; alloy structural
analysis; ***phase change optical recording disks*** ; amorphous
recording mark stability; ***X-ray diffraction*** ; scanning electron
microscopy; transmission electron microscopy; XRD; SEM; TEM; annealing;
Ag-Sb-Te
CHI AgSbTe ss, Ag ss, Sb ss, Te ss
ET Ag*Sb*Te; Ag sy 3; sy 3; Sb sy 3; Te sy 3; Ag-Sb-Te; AgSbTe; Ag cp; cp; Sb
cp; Te cp; Ag; Sb; Te

L8 ANSWER 53 OF 75 INSPEC (C) 2006 IEE on STN
AN 2002:7333762 INSPEC DN A2002-17-6470K-015; B2002-09-4120-011;
C2002-09-5320K-005
TI Structural and thermal analysis of Ag-Sb- ***Te*** alloy and its films
for phase change optical memories.
AU Sharma, Y.D.; Bhatnagar, P.K. (Dept. of Electron. Sci., Delhi Univ.,
India)
SO Optical Engineering (July 2002) vol.41, no.7, p.1668-73. 11 refs.
Doc. No.: S0091-3286(02)03707-8
Published by: SPIE
Price: CCCC 0091-3286/2002/41(7)/1668/6/$15.00
CODEN: OPEGAR ISSN: 0091-3286
SICI: 0091-3286(200207)41:7L.1668:STAA;1-L
DT Journal
TC Experimental
CY United States
LA English
AB An Ag-Sb- ***Te*** alloy and its films are prepared as a new optical
recording amorphous crystalline (a to c) phase transformation material.
The crystallization process of Ag-Sb- ***Te*** films is systematically
studied through measurement of recording characteristics to solve the
trade-off problem between data (amorphous) stability and erasing
sensitivity. Phase change ***optical*** recording ***disks***
demonstrate long thermal stability of the amorphous recording marks. The
crystallization process of Ag-Sb- ***Te*** material was studied using
differential thermal analysis (DTA), and the nature of the material was
studied by ***X*** -ray ***diffraction*** (XRD), scanning electron
microscopy (SEM), and transmission electron microscopy (TEM),
respectively. The films were studied for both cases of before and after
annealing. It was concluded that the alloy (Ag-Sb- ***Te***) could be
used as a phase change optical memory material.
CC A6470K Solid-solid transitions; A4280T Optical storage and retrieval;
A6110F Experimental X-ray diffraction and scattering techniques; A6116D
Electron microscopy determinations of structures; A8130H
Constant-composition solid-solid phase transformations: polymorphic,
massive, and order-disorder; A6470D Solid-liquid transitions; B4120
Optical storage and retrieval; C5320K Optical storage
CT ANTIMONY ALLOYS; CRYSTALLISATION; ***OPTICAL*** ***DISC***
STORAGE; OPTICAL MATERIALS; SCANNING ELECTRON MICROSCOPY; SILVER ALLOYS;
SOLID-STATE PHASE TRANSFORMATIONS; ***TELLURIUM*** ALLOYS;
TRANSMISSION ELECTRON MICROSCOPY; ***X*** -RAY ***DIFFRACTION***
ST ***Ag-Sb-Te alloy*** ; phase change optical memories; structural
analysis; thermal analysis; optical recording amorphous crystalline phase
transformation material; crystallization process; ***Ag-Sb-Te films***
; recording characteristics; amorphous stability; erasing sensitivity;
phase change optical recording disks ; long thermal stability;
amorphous recording marks; ***x-ray diffraction*** ; scanning electron
microscopy; SEM; transmission electron microscopy; TEM; optical memory
material; ***Ag-Sb-Te***
CHI AgSbTe ss, Ag ss, Sb ss, Te ss
ET Ag*Sb*Te; Ag sy 3; sy 3; Sb sy 3; Te sy 3; Ag-Sb-Te; AgSbTe; Ag cp; cp; Sb
cp; Te cp; Ag; Sb; Te

L8 ANSWER 54 OF 75 INSPEC (C) 2006 IEE on STN
AN 2002:7315908 INSPEC DN A2002-16-4280T-039; B2002-08-4120-088
TI New chalcogenide alloy as phase-change optical recording material.
AU Sharma, Y.D.; Singh, L.; Bhatnagar, P.K. (Dept. of Electron. Sci., Delhi
Univ., India)
SO Proceedings of the SPIE - The International Society for Optical
Engineering (2001) vol.4453, p.112-20. 10 refs.

Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/01/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2001)4453L.112:CAPC;1-N
Conference: Materials and Devices for Photonic Circuits II. San Diego, CA, USA, 1-2 Aug 2001
Sponsor(s): SPIE

DT Conference Article; Journal
TC New Development; Experimental
CY United States
LA English
AB Phase change ***optical*** recording ***disks*** using chalcogenide alloy Ag-Sb- ***Te*** have been found to demonstrate long thermal stability of the amorphous recording marks. The crystallization process and nature of Ag-Sb- ***Te*** material were studied using differential thermal analysis (DTA) and ***X*** ray ***diffraction*** (XRD) respectively. The films were studied for both the cases: before and after annealing and it was concluded that the alloy (Ag-Gb- ***Te***) can be used as a phase change optical memory material.
CC A4280T Optical storage and retrieval; A0720 Thermal instruments and techniques; A8130H Constant-composition solid-solid phase transformations: polymorphic, massive, and order-disorder; A6470K Solid-solid transitions; A4280X Optical coatings; A7865M Optical properties of amorphous and glassy semiconductors and insulators (thin films/low-dimensional structures); B4120 Optical storage and retrieval; B4190F Optical coatings and filters; B2520F Amorphous and glassy semiconductors
CT ANTIMONY ALLOYS; CHALCOGENIDE GLASSES; DIFFERENTIAL THERMAL ANALYSIS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; SILVER ALLOYS; SOLID-STATE PHASE TRANSFORMATIONS; ***TELLURIUM*** ALLOYS; THERMAL STABILITY; ***X*** -RAY ***DIFFRACTION***
ST chalcogenide alloy phase-change optical recording material; ***phase*** *** change optical recording disks*** ; ***Ag-Sb-Te*** ; long thermal stability; differential thermal analysis; ***X ray diffraction*** ; annealing; optical films; amorphous recording marks; crystallization process
CHI AgSbTe ss, Ag ss, Sb ss, Te ss
ET Ag*Sb*Te; Ag sy 3; sy 3; Sb sy 3; Te sy 3; Ag-Sb-Te; Ag; Te; AgSbTe; Ag cp; cp; Sb cp; Te cp; Sb

L8 ANSWER 55 OF 75 INSPEC (C) 2006 IEE on STN
AN 2002:7291679 INSPEC DN A2002-14-4270-004; B2002-07-4110-020
TI Acceleration of crystallization speed by Sn addition to Ge-Sb- ***Te*** phase-change recording material.
AU Kojima, R.; Yamada, N. (Opt. Disk Syst. Dev. Center, Matsushita Electr. Ind. Co. Ltd., Osaka, Japan)
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (Oct. 2001) vol.40, no.10, p.5930-7. 13 refs.
Published by: Japan Soc. Appl. Phys
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(200110)40:10L.5930:ACSA;1-V
DT Journal
TC Application; Experimental
CY Japan
LA English
AB We have demonstrated that a quaternary Ge-Sn-Sb- ***Te*** phase-change recording material obtained by adding Sn to Ge-Sb- ***Te*** has a higher crystallization speed than Ge-Sb- ***Te*** , and gives a larger erase ratio than Ge-Sb- ***Te*** when film thickness is decreased. Static evaluations have shown that a 6-nm-thick quaternary material was crystallized by laser irradiation of 50 ns. Measurements carried out under the conditions of a wavelength of 405 nm, a linear speed of 8.6 m/s and a mark length of 0.294 mu m showed that the erase ratio of over 30 dB was obtained with the new composition for a 6-nm-thick layer. A carrier-to-noise ratio (CNR) exceeding 50 dB was also obtained. We think that these effects of Sn addition which give rise to complete crystallization are brought about by abundant nucleation in the amorphous phase even in thin layers. It was confirmed by ***X*** -ray ***diffraction*** analyses that the new Ge-Sn-Sb- ***Te*** material has a single-phase-NaCl-type structure, like the conventional compositions of Ge-Sb- ***Te*** .
CC A4270Y Other optical materials; A4280T Optical storage and retrieval;

A6180B Ultraviolet, visible and infrared radiation effects; A6140 Structure of amorphous and polymeric materials; B4110 Optical materials; B4120 Optical storage and retrieval
CT AMORPHOUS STATE; CRYSTALLISATION; GERMANIUM COMPOUNDS; LASER BEAM EFFECTS; NUCLEATION; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL MATERIALS; TIN COMPOUNDS; ***X*** -RAY ***DIFFRACTION***
ST crystallization speed; Sn addition; ***Ge-Sb-Te phase-change recording*** *** material*** ; erase ratio; film thickness; laser irradiation; carrier-to-noise ratio; nucleation; amorphous phase; ***X-ray*** *** diffraction*** ; single-phase-NaCl-type structure; 6 nm; 50 ns; 405 nm; ***Ge-Sb-Te-Sn***
CHI GeSbTeSn ss, Ge ss, Sb ss, Sn ss, Te ss
PHP size 6.0E-09 m; time 5.0E-08 s; wavelength 4.05E-07 m
ET Sn; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge-Sb-Te; Ge*Sb*Sn*Te; Ge sy 4; sy 4; Sb sy 4; Sn sy 4; Te sy 4; Ge-Sn-Sb-Te; B; Cl*Na; NaCl; Na cp; cp; Cl cp; Ge-Sb-Te-Sn; GeSbTeSn; Ge cp; Sb cp; Te cp; Sn cp; Ge; Sb; Te

L8 ANSWER 56 OF 75 INSPEC (C) 2006 IEE on STN
AN 2002:7203327 INSPEC DN A2002-08-7865M-003; B2002-04-4110-009
TI Optical properties of Ag8In14Sb55Te23 phase-change films.
AU Finyan Li; Fuxi Gan (Inst. of Opt. & Fine Mech., Acad. Sinica, Shanghai, China)
SO Thin Solid Films (1 Jan. 2002) vol.402, no.1-2, p.232-6. 13 refs.
Doc. No.: S0040-6090(01)01416-X
Published by: Elsevier
Price: CCCC 0040-6090/02/$22.00
CODEN: THSFAP ISSN: 0040-6090
SICI: 0040-6090(20020101)402:1/2L.232:OPAP;1-3
DT Journal
TC Practical; Experimental
CY Switzerland
LA English
AB Ag8In14Sb55Te23 phase-change films were deposited on K9 glass substrates by RF magnetron sputtering technology using an Ag-In-Sb- ***Te*** alloy target. The optical properties and short-wavelength optical storage properties of Ag8In14Sb55Te23 films were studied. ***X*** -ray ***diffraction*** results indicate that the crystallized compounds consist mainly of AgSbTe2, with small amounts of Sb and AgInTe2. Comparatively large absorbance was observed in the wavelength range of visible light. The optical storage characteristics of Ag8In14Sb55Te23 thin films indicate that larger reflectivity contrast can be obtained at lower writing power and shorter writing pulse width.
CC A7865M Optical properties of amorphous and glassy semiconductors and insulators (thin films/low-dimensional structures); A4270Y Other optical materials; A6855 Thin film growth, structure, and epitaxy; A8115C Deposition by sputtering; A4280T Optical storage and retrieval; A6470K Solid-solid transitions; A7820D Optical constants and parameters (condensed matter); A7840H Visible and ultraviolet spectra of other nonmetals; B4110 Optical materials; B0520B Sputter deposition; B4120 Optical storage and retrieval
CT ANTIMONY COMPOUNDS; DIFFERENTIAL THERMAL ANALYSIS; INDIUM COMPOUNDS; OPTICAL CONSTANTS; ***OPTICAL*** ***DISC*** STORAGE; ORDER-DISORDER TRANSFORMATIONS; REFLECTIVITY; SILVER COMPOUNDS; SPUTTERED COATINGS; ***TELLURIUM*** COMPOUNDS; VISIBLE SPECTRA; ***X*** -RAY ***DIFFRACTION***
ST Ag8In14Sb55Te23 phase-change films; optical properties; K9 glass substrates; RF magnetron sputtering; short-wavelength optical storage properties; ***X-ray diffraction*** ; visible light; larger reflectivity contrast; lower writing power; shorter writing pulse width; 100 nm; 20 to 600 C; 350 to 800 nm; 400 to 700 nm; Ag8In14Sb55Te23
CHI Ag8In14Sb55Te23 ss, In14 ss, Sb55 ss, Te23 ss, Ag8 ss, Ag ss, In ss, Sb ss, Te ss
PHP size 1.0E-07 m; temperature 2.93E+02 to 8.73E+02 K; wavelength 3.5E-07 to 8.0E-07 m; wavelength 4.0E-07 to 7.0E-07 m
ET Ag*In*Sb*Te; Ag sy 4; sy 4; In sy 4; Sb sy 4; Te sy 4; Ag8In14Sb55Te23; Ag cp; cp; In cp; Sb cp; Te cp; K; Ag-In-Sb-Te; Ag*Sb*Te; Ag sy 3; sy 3; Sb sy 3; Te sy 3; AgSbTe2; Sb; Ag*In*Te; In sy 3; AgInTe2; Ag8In14Sb55Te; In; Te; Ag

L8 ANSWER 57 OF 75 INSPEC (C) 2006 IEE on STN
AN 2001:7032430 INSPEC DN A2001-20-8115C-004; B2001-10-0520B-019
TI Deposition and characterization of Ge-Sb- ***Te*** layers for

applications in optical data storage.
AU Kyrsta, S.; Cremer, R.; Neuschutz, D. (Lehrstuhl fur Theor. Huttenkunde, Rheinisch-Westfalisches Tech. Hochschule Aachen, Germany); Laurenzis, M.; Bolivar, P.H.; Kurz, H.
SO Applied Surface Science (16 July 2001) vol.179, no.1-4, p.55-60. 6 refs.
Doc. No.: S0169-4332(01)00263-X
Published by: Elsevier
Price: CCCC 0169-4332/2001/$20.00
CODEN: ASUSEE ISSN: 0169-4332
SICI: 0169-4332(20010716)179:1/4L.55:DCLA;1-P
Conference: 11th Conference on Applied Surface Analysis. Leipzig, Germany, 24-28 Sept 2000
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB Ge-Sb- ***Te*** films for optical data storage applications were deposited by magnetron sputtering of separate Ge, Sb, and ***Te*** targets on Si(111) wafers in a dc argon plasma. To investigate the influence of the chemical composition of the phase change material on its optical properties, films with lateral compositional gradients of up to 30 at.% were deposited. The composition and structure of the films were investigated by X-ray photoelectron spectroscopy (XPS), electron probe microanalysis (EPMA) and ***X*** -ray ***diffraction*** (XRD) on plain Si wafers, whereas the phase change velocity of Ge-Sb- ***Te*** as a re-writable ***optical*** data storage ***medium*** was determined on Si/Al/SiO2/Ge-Sb- ***Te*** multilayers near to technical conditions. The phase change of Ge-Sb- ***Te*** films was induced and characterized with a static tester consisting of an optical microscope with an integrated high power laser diode. The change in reflectivity induced by the laser pulses was measured by a high sensitivity photodetector. Depending on the composition, the crystallization time was determined between 220 and 500 ns, while the amorphization time was between 20 and 120 ns.
CC A8115C Deposition by sputtering; A6855 Thin film growth, structure, and epitaxy; A6140D Structure of glasses; A7960E Photoelectron spectra of semiconductors and insulators; A6470K Solid-solid transitions; A4280T Optical storage and retrieval; B0520B Sputter deposition; B2520F Amorphous and glassy semiconductors; B4120 Optical storage and retrieval
CT AMORPHISATION; ANTIMONY COMPOUNDS; CHALCOGENIDE GLASSES; CRYSTALLISATION; ELECTRON PROBE ANALYSIS; GERMANIUM COMPOUNDS; OPTICAL MICROSCOPY; OPTICAL STORAGE; SEMICONDUCTOR THIN FILMS; SPUTTER DEPOSITION; ***X*** -RAY ***DIFFRACTION*** ; X-RAY PHOTOELECTRON SPECTRA
ST optical data storage; thin films; magnetron sputtering; Si(111) wafers; chemical composition; XPS; EPMA; ***X-ray diffraction*** ; phase change velocity; multilayers; optical microscope; reflectivity; crystallization time; amorphization time; ***Ge-Sb-Te*** ; Si; Si-Al-SiO2-GeSbTe
CHI GeSbTe ss, Ge ss, Sb ss, Te ss; Si sur, Si el; Si-Al-SiO2-GeSbTe int, GeSbTe int, SiO2 int, Al int, Ge int, O2 int, Sb int, Si int, Te int, O int, GeSbTe ss, Ge ss, Sb ss, Te ss, SiO2 bin, O2 bin, Si bin, O bin, Al el, Si el
ET Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge-Sb-Te; Ge; Sb; Te; Si; O*Si; SiO2; Si cp; cp; O cp; Al*Ge*O*Sb*Si*Te; Al sy 6; sy 6; Ge sy 6; O sy 6; Sb sy 6; Si sy 6; Te sy 6; GeSbTe; Ge cp; Sb cp; Te cp; Si-Al-SiO2-GeSbTe; Al*O*Si; Al sy 3; O sy 3; Si sy 3; SiO; Si-Al-SiO; Al; O

L8 ANSWER 58 OF 75 INSPEC (C) 2006 IEE on STN
AN 2001:6966881 INSPEC DN A2001-15-6855-051; B2001-08-4190F-010
TI Crystallization of Ag-In-Sb- ***Te*** phase-change optical recording films.
AU Lih-Hsin Chou; Yem-Yeu Chang; Yeong-Cherng Chai; Shiunn-Yeong Wang (Dept. of Mater. Sci. & Eng., Nat. Tsing Hua Univ., Hsinchu, Taiwan)
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (May 2001) vol.40, no.5A, p.3375-6. 10 refs.
Published by: Japan Soc. Appl. Phys
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(200105)40:5AL.3375:CPCO;1-#
DT Journal
TC Experimental
CY Japan
LA English
AB Crystalline phases formed on thermally annealed and laser-annealed

Ag12.4In3.8Sb55.2Te28.6 four-element alloy films were observed to be different. After 1 h isothermal annealing at temperatures between 190 degrees C and 450 degrees C, hexagonal Sb and chalcopyrite AgInTe2 phases were observed, whereas laser annealing by initialization at laser power higher than 2.86 mW/ mu m2 yielded cubic crystalline Sb and AgSbTe2 phases. There was only one exothermic peak at 170 degrees C determined by differential scanning calorimetry (DSC) measurement. Only the hexagonal Sb phase was observed by ***X*** -ray ***diffraction*** of samples subjected to DSC measurement. These experimental results suggest that the activation energy for crystallization derived from Kissinger's equation using DSC data may not be the same as that for crystallization during erasing of phase-change ***optical*** recording ***disks*** .

CC A6855 Thin film growth, structure, and epitaxy; A6470K Solid-solid transitions; A4270G Light-sensitive materials; A4280X Optical coatings; A4280T Optical storage and retrieval; A6170A Annealing processes; A8140G Other heat and thermomechanical treatments; A8140T Optical properties (related to treatment conditions); A6180B Ultraviolet, visible and infrared radiation effects; A4262A Laser materials processing; B4190F Optical coatings and filters; B2520F Amorphous and glassy semiconductors; B4110 Optical materials; B4120 Optical storage and retrieval; B2550A Annealing processes in semiconductor technology; B4360B Laser materials processing

CT ANNEALING; ANTIMONY COMPOUNDS; CHALCOGENIDE GLASSES; CRYSTALLISATION; DIFFERENTIAL SCANNING CALORIMETRY; INDIUM COMPOUNDS; LASER BEAM ANNEALING; OPTICAL FILMS; OPTICAL STORAGE; PHASE EQUILIBRIUM; SEMICONDUCTOR THIN FILMS; SILVER COMPOUNDS; ***X*** -RAY ***DIFFRACTION***

ST crystallization; ***Ag-In-Sb-Te phase-change optical recording films*** ; crystalline phases; thermally annealed Ag12.4In3.8Sb55.2Te28.6 four-element alloy films; laser-annealed Ag12.4In3.8Sb55.2Te28.6 four-element alloy films; isothermal annealing; hexagonal Sb; chalcopyrite AgInTe2 phases; laser annealing; cubic crystalline Sb; AgSbTe2 phases; exothermic peak; differential scanning calorimetry; DSC; ***X-ray*** *** diffraction*** ; activation energy; erasing; 190 to 450 C; 170 C; Ag12.4In3.8Sb55.2Te28.6; Sb; AgSbTe2; AgInTe2

CHI Ag12.4In3.8Sb55.2Te28.6 ss, Ag12.4 ss, Sb55.2 ss, Te28.6 ss, In3.8 ss, Ag ss, In ss, Sb ss, Te ss; Sb el; AgSbTe2 ss, Te2 ss, Ag ss, Sb ss, Te ss; AgInTe2 ss, Te2 ss, Ag ss, In ss, Te ss

PHP temperature 4.63E+02 to 7.23E+02 K; temperature 4.43E+02 K

ET Ag*In*Sb*Te; Ag sy 4; sy 4; In sy 4; Sb sy 4; Te sy 4; Ag-In-Sb-Te; Ag12.4In3.8Sb55.2Te28.6; Ag cp; cp; In cp; Sb cp; Te cp; C; Sb; Ag*In*Te; Ag sy 3; sy 3; In sy 3; Te sy 3; AgInTe2; Ag*Sb*Te; Sb sy 3; AgSbTe2; Ag12.4In3.8Sb55.2Te; Ag; Te; In; AgSbTe; AgInTe

L8 ANSWER 59 OF 75 INSPEC (C) 2006 IEE on STN

AN 2001:6952148 INSPEC DN A2001-14-4280X-006; B2001-07-4190F-035

TI Structural properties and static optical recording performance of TeOx thin films using short-wavelength laser.

AU Li Qinghui; Gu Donghong; Gan Fuxi (Inst. of Opt. & Fine Mech., Acad. Sinica, Shanghai, China)

SO Acta Photonica Sinica (April 2001) vol.30, no.4, p.468-72. 8 refs.
Published by: Science Press
CODEN: GUXUED ISSN: 1004-4213
SICI: 1004-4213(200104)30:4L.468:SPSO;1-0

DT Journal

TC Experimental

CY China

LA Chinese

AB Monolayer TeOx thin films were deposited on K9 glass substrates by vacuum evaporation. The structural properties of the films were analyzed by X-ray photo-electron spectroscopy (XPS), X-ray diffractometer (XRD) and atomic force microscope (AFM). It was found that the films represented a two-component system comprising ***tellurium*** particles dispersed in an amorphous TeO2 matrix. The dispersed ***tellurium*** particles in the as-deposited films were in crystalline state. The existence of TeO2 enhanced the stability of ***tellurium*** particles. The films had finely granular structure and coarse surface. Reflectivity increase of the films after being annealed was related the segregation and redistribution of ***Te*** in TeO2 matrix and decrease of mean roughness. The reflectivity contrast was relatively high after being recorded using short-wavelength laser (514.4 nm) with writing power higher than 1.5 mW and short pulse width (50 ns). The films had good writing sensitivity. The results were helpful to select proper additives to TeOx thin films used

for high density ***optical*** storage ***medium*** .
CC A4280X Optical coatings; A4280T Optical storage and retrieval; A7960E Photoelectron spectra of semiconductors and insulators; A6110M Crystal structure solution and refinement techniques using X-rays; A6116P Scanning probe microscopy determinations of structures; A6817 Monolayers and Langmuir-Blodgett films; B4190F Optical coatings and filters; B4120 Optical storage and retrieval
CT ATOMIC FORCE MICROSCOPY; MONOLAYERS; OPTICAL FILMS; OPTICAL STORAGE; SENSITIVITY; SURFACE STRUCTURE; ***TELLURIUM*** COMPOUNDS; ***X*** -RAY ***DIFFRACTION*** ; X-RAY PHOTOELECTRON SPECTRA
ST structural properties; static optical recording performance; TeOx thin films; short-wavelength laser; monolayer TeOx thin films; K9 glass substrates; vacuum evaporation; X-ray photo-electron spectroscopy; X-ray diffractometer; atomic force microscope; AFM; two-component system; ***tellurium particles*** ; amorphous TeO2 matrix; ***dispersed*** *** tellurium particles*** ; as-deposited films; crystalline state; finely granular structure; coarse surface; reflectivity; reflectivity contrast; writing power; short pulse width; good writing sensitivity; ***high*** *** density optical storage medium*** ; 514.4 nm; 1.5 mW; 50 ns; TeO2
CHI TeO2 int, O2 int, Te int, O int, TeO2 bin, O2 bin, Te bin, O bin
PHP wavelength 5.144E-07 m; power 1.5E-03 W; time 5.0E-08 s
ET O*Te; TeOx; Te cp; cp; O cp; K; TeO2; Te; TeO; O

L8 ANSWER 60 OF 75 INSPEC (C) 2006 FIZ KARLSRUHE on STN
AN 2000:6696004 INSPEC DN A2000-20-6160-017; B2000-10-4110-010
TI Crystal structure of GeTe and Ge2Sb2Te5 meta-stable phase.
AU Nonaka, T.; Ohbayashi, G. (Electron. & Imaging Mater. Res. Labs., Toray Ind., Inc., Shiga, Japan); Toriumi, Y.; Mori, Y.; Hashimoto, H.
SO Thin Solid Films (17 July 2000) vol.370, no.1-2, p.258-61. 9 refs.
Doc. No.: S0040-6090(99)01090-1
Published by: Elsevier
Price: CCCC 0040-6090/2000/$20.00
CODEN: THSFAP ISSN: 0040-6090
SICI: 0040-6090(20000717)370:1/2L.258:CSGG;1-D
DT Journal
TC Experimental
CY Switzerland
LA English
AB Direct ***X*** -ray ***diffraction*** measurement of the erased state of the Ge-Sb- ***Te*** recording layer in a four-layered phase change ***optical*** ***disk*** , which was produced by an ***optical*** ***disk*** drive, was performed. It was identified as an fcc crystal structure. In order to carry out the detailed crystal structure analysis by the powder ***X*** -ray ***diffraction*** method with Rietveld refinements, somewhat larger amount of the fcc crystal powder was prepared from deposited 10 mu m thick films. It revealed that Ge2Sb2Te5 belongs to the NaCl type structure (Fm3m) with the 4a site including 20% vacancies. The conclusion was supported by the results of the density measurements with Grazing Incidence of X-ray reflectivity.
CC A6160 Crystal structure of specific inorganic compounds; A4280T Optical storage and retrieval; A6470K Solid-solid transitions; B4110 Optical materials; B4120 Optical storage and retrieval
CT ANTIMONY ALLOYS; CRYSTAL STRUCTURE; CRYSTALLISATION; DENSITY; GERMANIUM ALLOYS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; SOLID-STATE PHASE TRANSFORMATIONS; ***TELLURIUM*** ALLOYS; VACANCIES (CRYSTAL)
ST Ge2Sb2Te5 meta-stable phase; germanium telluride; crystal structure; ***X-ray diffraction*** ; ***Ge-Sb-Te recording layer*** ; ***phase*** *** change optical disk,*** ; ***four-layered optical disk*** ; erased state; ***optical disk drive*** ; FCC structure; powder XRD; ***powder X-ray diffraction*** ; Rietveld refinements; powder preparation; NaCl type structure; vacancies; density measurements; grazing incidence X-ray reflectivity; lattice constants; fractional atomic coordinates; GeTe; Ge2Sb2Te5
CHI GeTe bin, Ge bin, Te bin; Ge2Sb2Te5 ss, Ge2 ss, Sb2 ss, Te5 ss, Ge ss, Sb ss, Te ss
ET Ge*Te; Ge sy 2; sy 2; Te sy 2; GeTe; Ge cp; cp; Te cp; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge2Sb2Te5; Sb cp; Ge-Sb-Te; Cl*Na; NaCl; Na cp; Cl cp; Fm; Ge; Te; Ge2Sb2Te; Sb

L8 ANSWER 61 OF 75 INSPEC (C) 2006 IEE on STN

AN 1999:6156751 INSPEC DN A1999-06-4280T-001; B1999-03-4120-018; C1999-03-5320K-014
TI Quantitative study of nitrogen doping effect on cyclability of Ge-Sb- ***Te*** phase-change ***optical*** ***disks*** .
AU Kojima, R. (Opt. Disk Syst. Div., Matsushita Electr. Ind. Co. Ltd., Osaka, Japan); Kouzaki, T.; Matsunaga, T.; Yamada, N.
SO Proceedings of the SPIE - The International Society for Optical Engineering (1998) vol.3401, p.14-23. 5 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/98/$10.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1998)3401L.14:QSND;1-7
Conference: Optical Data Storage '98. Aspen, CO, USA, 10-13 May 1998
Sponsor(s): SPIE; Opt. Soc. America; IEEE
DT Conference Article; Journal
TC Practical; Experimental
CY United States
LA English
AB By nitrogen doping into a Ge-Sb- ***Te*** phase change ***optical*** ***disk*** 's recording layer, we were able to significantly increase its cyclability. For example, our PD attained, at the maximum, 800000 overwrite cycles through accurate control of nitrogen concentration. We quantified the nitrogen concentration of recording layer using secondary ion mass spectrometry (SIMS) and determined, from the viewpoint of cyclability, signal amplitude and other parameters, the optimum concentration to be around 2-3 at.%. From analyses by thermal desorption mass spectrometry (TDMS) and ***X*** -ray ***diffraction*** (XD) using powder, we found: (1) nitrogen atoms are mainly bound with Ge to create an amorphous phase of Ge-N; (2) as long as the nitrogen concentration remains around 5 at.%, those Ge, Sb and ***Te*** atoms which are not bound with nitrogen form NaCl type crystals. We obtained the following model by combining the results of the above analysis. Nitrogen-doped Ge-Sb- ***Te*** recording layer is composed of Ge-Sb- ***Te*** grains intermingled with a small quantity of amorphous Ge-N, which exists in the form of a thin film penetrating the grain boundary of Ge-Sb- ***Te*** . The Ge-N composing this high-melting-point material layer appears to suppress any micro-material-flow that may occur during overwrite.
CC A4280T Optical storage and retrieval; A6470K Solid-solid transitions; A4280X Optical coatings; A6110 X-ray determination of structures; B4120 Optical storage and retrieval; B4190F Optical coatings and filters; C5320K Optical storage
CT ANTIMONY ALLOYS; GERMANIUM ALLOYS; NITROGEN; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; SECONDARY ION MASS SPECTROSCOPY; SOLID-STATE PHASE TRANSFORMATIONS; TERBIUM ALLOYS; ***X*** -RAY ***DIFFRACTION***
ST quantitative study; nitrogen doping effect; cyclability; ***Ge-Sb-Te*** *** phase-change optical disks*** ; ***Ge-Sb-Te phase change optical disk*** *** recording layer*** ; overwrite cycles; nitrogen concentration; secondary ion mass spectrometry; SIMS; signal amplitude; optimum concentration; thermal desorption mass spectrometry; ***X-ray diffraction*** ; ***nitrogen-doped Ge-Sb-Te recording layer*** ; ***Ge-Sb-Te grains*** ; thin film; grain boundary; high-melting-point material layer; micro-material-flow; GeSbTe:N
CHI GeSbTe:N int, GeSbTe int, Ge int, Sb int, Te int, N int, GeSbTe:N ss, GeSbTe ss, Ge ss, Sb ss, Te ss, N ss, N el, N dop
ET Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge-Sb-Te; Ge; Ge*N; Ge-N; Sb; Te; Cl*Na; NaCl; Na cp; cp; Cl cp; Ge*N*Sb*Te; Ge sy 4; sy 4; N sy 4; Sb sy 4; Te sy 4; GeSbTe:N; N doping; doped materials; Ge cp; Sb cp; Te cp; GeSbTe

L8 ANSWER 62 OF 75 INSPEC (C) 2006 IEE on STN
AN 1998:5980942 INSPEC DN A9817-7865-016; B9809-4110-007
TI Characterization of Ge-Sb- ***Te*** films for phase-change optical memory.
AU Sung Jin Park; Soonil Lee; Soo-Ghee Oh (Dept. of Phys., Ajou Univ., Suwon, South Korea); Won Mok Kim; Byung-Ki Cheong; Moonkyo Chung; Soon Gwang Kim
SO Ungyong Mulli (May 1998) vol.11, no.3, p.359-64. 18 refs.
Published by: Korean Phys. Soc
CODEN: HMHMEY ISSN: 1013-7009
SICI: 1013-7009(199805)11:3L.359:CFPC;1-J
DT Journal

TC   Experimental
CY   Korea, Democratic People's Republic of
LA   Korean
AB   Ge-Sb- ***Te*** , the most widely used active recording-layer material for phase-change ***optical*** ***disks*** , films were deposited on glass (Corning 7059) substrates by using medium-frequency (40 kHz) magnetron sputtering, and the optical properties and the structure of these films were examined. Our investigation showed that all the as-deposited Ge-Sb- ***Te*** films had an amorphous structure and that their optical constants were similar, regardless of the sputtering power. However, considerable changes in both the structure and the optical constants of these films were induced by annealing. In particular, a prominent increase in the extinction coefficient over the measured photon-energy range, and slight increase in the refractive index below a photon energy of 1.6 eV with a decrease in other photon-energy ranges were observed. In addition, the energy gap produced by a Tauc's plot was found to decrease dramatically after annealing. From the ***X*** -ray ***diffraction*** and Raman scattering spectra, we found that these changes in the optical properties of the Ge-Sb- ***Te*** films were concomitant with the appearance of features attributable to the crystalline phases of these films.
CC   A7865J Optical properties of nonmetallic thin films; A6140D Structure of glasses; A6470K Solid-solid transitions; A7820D Optical constants and parameters; A7830L Infrared and Raman spectra in disordered solids; A8140G Other heat and thermomechanical treatments; A4230N Optical storage and retrieval; A6855 Thin film growth, structure, and epitaxy; A8140T Optical properties (related to treatment conditions); B4110 Optical materials; B4120 Optical storage and retrieval
CT   ANNEALING; ANTIMONY COMPOUNDS; CHALCOGENIDE GLASSES; CRYSTALLISATION; ENERGY GAP; GERMANIUM COMPOUNDS; GLASS STRUCTURE; OPTICAL CONSTANTS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; RAMAN SPECTRA; REFRACTIVE INDEX; SPUTTERED COATINGS; ***X*** -RAY ***DIFFRACTION***
ST   ***Ge-Sb-Te films*** ; phase-change optical memory; recording-layer material; ***phase-change optical disks*** ; glass Corning 7059 substrates; magnetron sputtering; optical properties; structure; amorphous structure; optical constants; annealing; extinction coefficient; refractive index; energy gap; Tauc plot; ***X-ray diffraction*** ; Raman scattering spectra; crystalline phases; 40 kHz; 1.6 eV; ***Ge-Sb-Te***
CHI GeSbTe ss, Ge ss, Sb ss, Te ss
PHP frequency 4.0E+04 Hz; electron volt energy 1.6E+00 eV
ET   Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge-Sb-Te; GeSbTe; Ge cp; cp; Sb cp; Te cp; Ge; Sb; Te

L8   ANSWER 63 OF 75 INSPEC (C) 2006 IEE on STN
AN   1997:5763209 INSPEC   DN B9801-4120-005
TI   Reliability of the phase change ***optical*** ***disk*** .
AU   Hirota, K.; Ohbayashi, G. (Electron. & Imaging Mater. Res. Lab., Toray Ind. Inc., Shiga, Japan)
SO   Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (Oct. 1997) vol.36, no.10, p.6398-402. 3 refs.
     Published by: Publication Office, Japanese Journal Appl. Phys
     CODEN: JAPNDE ISSN: 0021-4922
     SICI: 0021-4922(199710)36:10L.6398:RPCO;1-6
DT   Journal
TC   Experimental
CY   Japan
LA   English
AB   Thermal stability of the Al-alloy reflective layer is essential for the archival life of a rewritable phase change ***optical*** ***disk*** . The new Al-Hf-Pd alloy reflective layer provides excellent thermal stability. A disk using this Al-alloy and a Pd-Ge-Sb- ***Te*** alloy recording layer is extremely stable. The bit-error-rate (BER) of the recorded signal did not change substantially after an acceleration test of 6800 h under the conditions of 90 degrees C, 80%RH. ***X*** -ray ***diffraction*** analysis showed that the new additive components (Hf, Pd) of the Al-alloy prevented the growth of the Al crystals.
CC   B4120 Optical storage and retrieval
CT   LIFE TESTING; ***OPTICAL*** ***DISC*** STORAGE; THERMAL STABILITY; ***X*** -RAY ***DIFFRACTION***
ST   ***rewritable phase change optical disk*** ; Al-alloy reflective layer; archival life; thermal stability; bit-error-rate; acceleration test;

X-ray diffraction ; PdGeSbTe; AlHfPd
CHI PdGeSbTe int, Ge int, Pd int, Sb int, Te int, PdGeSbTe ss, Ge ss, Pd ss, Sb ss, Te ss; AlHfPd int, Al int, Hf int, Pd int, AlHfPd ss, Al ss, Hf ss, Pd ss
ET Al; Al*Hf*Pd; Al sy 3; sy 3; Hf sy 3; Pd sy 3; Al-Hf-Pd; Ge*Pd*Sb*Te; Ge sy 4; sy 4; Pd sy 4; Sb sy 4; Te sy 4; Pd-Ge-Sb-Te; C; Hf; Pd; PdGeSbTe; Pd cp; cp; Ge cp; Sb cp; Te cp; AlHfPd; Al cp; Hf cp; Ge; Sb; Te

L8 ANSWER 64 OF 75 INSPEC (C) 2006 IEE on STN
AN 1997:5760471 INSPEC DN A9801-4230-018; B9801-4120-004
TI Investigation of basic optical characteristics in ***Te*** -Ge binary thin films for the optical memory.
AU Young-Jong Lee (Dept. of Electron. Eng., Yeojoo Tech. Coll., South Korea); Hong-Seok Kim; Hong-Bay Chung
SO Proceedings of 5th International Conference on Properties and Applications of Dielectric Materials (Cat. No.97CH35794)
New York, NY, USA: IEEE, 1997. p.631-4 vol.2 of 2 vol. xx+180 pp. 9 refs.
Conference: Seoul, South Korea, 25-30 May 1997
Sponsor(s): IEEE Dielectr. & Electr. Insulation Soc
ISBN: 0-7803-2651-2
DT Conference Article
TC Experimental
CY United States
LA English
AB In this work, we have studied the variation of optical characteristics in Te100-xGe, binary system thin films with compositional ranges of x=10 to x=60. To obtain the optimum composition capable of utilizing as an optical recording material, the transmittance and reflectance changes and the contrast ratio between amorphous and crystalline films are investigated using a diode laser with wavelength of 780 nm. It was found that the as-deposited amorphous thin films prepared by thermal evaporation are crystallized by annealing around the crystalline temperature Tc for each film and then crystalline phases are analyzed using XRD. The reflectance of crystalline films increased the comparison with the amorphous films. The contrast ratio showed 1.45 2.1. The amorphous thin films expect with composition of x=50, 60 at% and the crystalline thin films with composition 7=10, 40 at% showed the transmittance change in 80%RH/66 degrees C environments. As the results, the Te50Ge50, Te40Ge60 thin film can be estimated at the optimum ***media*** for ***optical*** recording in our study.
CC A4230N Optical storage and retrieval; A7865J Optical properties of nonmetallic thin films; A4270F Other optical materials; B4120 Optical storage and retrieval; B4110 Optical materials
CT ANNEALING; CRYSTALLISATION; GERMANIUM ALLOYS; OPTICAL FILMS; OPTICAL STORAGE; ***TELLURIUM*** ALLOYS; VACUUM DEPOSITED COATINGS
ST optical characteristics; ***Te-Ge binary thin film*** ; optical memory; composition; transmittance; reflectance; contrast ratio; amorphous phase; crystallization; diode laser; thermal evaporation; crystalline phase; annealing; phase change optical recording material; ***X-ray*** *** diffraction*** ; 780 nm; ***Te-Ge***
CHI TeGe bin, Ge bin, Te bin
PHP wavelength 7.8E-07 m
ET Ge*Te; Ge sy 2; sy 2; Te sy 2; Te-Ge; In; Te100-xGe; Te cp; cp; Ge cp; C; Te50Ge50; Te40Ge60; TeGe; Ge; Te

L8 ANSWER 65 OF 75 INSPEC (C) 2006 IEE on STN
AN 1993:4339212 INSPEC DN A9306-6140D-004
TI X-ray scattering studies of the short and medium range ordering in AsxTe1-x glasses.
AU Ma, Q.; Raoux, D.; Benazeth, S. (LURE, Univ. de Paris-Sud, Orsay, France)
SO Journal of Non-Crystalline Solids (Nov. 1992) vol.150, no.1-3, p.366-70. 11 refs.
Price: CCCC 0022-3093/92/$05.00
CODEN: JNCSBJ ISSN: 0022-3093
Conference: Structure of Non-Crystalline Materials. Fifth International Conference. Sendai, Japan, 2-6 Sept 1991
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB The structures of AsxTe1-x (x=0.2, 0.4, and 0.5) glasses are studied using the differential X-ray anomalous scattering technique. The partial

distribution functions have also been obtained for the stoichiometric As2Te3 glass, giving ***information*** on the ***medium*** range ordering. All the glasses show chemical disorder to differing extents, the As2Te3 glass being the most disordered. The ***Te*** coordination number undergoes a change at x=0.4 where it is approximately 2.5 compared with 2 for AsTe. This change indicates the existence of about 50% of threefold ***Te*** sites in the stoichiometric glass, as well as in the ***Te*** -rich glasses. Some of the physical properties of the glasses may be explained based on these results.

CC A6140D Glasses; A7870C X-ray scattering

CT ARSENIC COMPOUNDS; CHALCOGENIDE GLASSES; GLASS STRUCTURE; SHORT-RANGE ORDER; ***X*** -RAY ***DIFFRACTION*** EXAMINATION OF MATERIALS; X-RAY SCATTERING

ST short range ordering; X-ray scattering studies; medium range ordering; structures; differential X-ray anomalous scattering; partial distribution functions; stoichiometric As2Te3 glass; chemical disorder; ***Te*** *** coordination number*** ; ***Te-rich glasses*** ; AsxTe1-x glasses

CHI AsTe bin, As bin, Te bin

ET As*Te; As sy 2; sy 2; Te sy 2; AsxTe1-x; As cp; cp; Te cp; As2Te3; Te; AsTe; As

L8 ANSWER 66 OF 75 INSPEC (C) 2006 IEE on STN

AN 1993:4319278 INSPEC DN A9304-6855-033; B9302-4120-009

TI The relationship between crystal structure and performance as ***optical*** recording ***media*** in ***Te*** -Ge-Sb thin films.

AU Strand, D.; Gonzalez-Hernandez, J.; Chao, B.S.; Ovshinsky, S.R.; Gasiorowski, P.; Pawlik, D.A. (Energy Conversion Devices, Inc., Troy, MI, USA)

SO Phase Transformation Kinetics in Thin Films Symposium
Editor(s): Chen, M.; Thompson, M.O.; Schwarz, R.B.; Libera, M.
Pittsburgh, PA, USA: Mater. Res. Soc, 1991. p.251-6 of xiii+366 pp. 6 refs.
Conference: Anaheim, CA, USA, 29 April-1 May 1991

DT Conference Article

TC Theoretical; Experimental

CY United States

LA English

AB The crystallization properties of ***Te*** -Ge and ***Te*** -Ge-Sb alloys prepared by thermal evaporation were analyzed using various characterization techniques. Similar to previous results, the data for ***Te*** -Ge shows that alloys that deviate slightly from Te50Ge50 stoichiometry show drastically slower crystallization kinetics. Raman spectroscopy and ***X*** -ray ***diffraction*** show that alloys having non-stoichiometric atomic ratios phase separate during crystallization into a Te50Ge50 phase plus pure crystalline ***tellurium*** or germanium. It is this relatively slow process of phase segregation which limits the crystallization rate. Phase segregation during crystallization of non-stoichiometric ***Te*** -Ge can be eliminated by adding antimony to samples having a ***tellurium*** concentration of from 45 to 55 atomic percent over a wide range of Ge:Sb ratios. These alloys can have laser induced crystallization times of less than 50 nsec. The thermal crystallization temperature is reduced only slightly when antimony is substituted for germanium.

CC A6855 Thin film growth, structure, and epitaxy; A4230N Optical storage and retrieval; A6842 Surface phase transitions and critical phenomena; B4120 Optical storage and retrieval

CT ANTIMONY ALLOYS; CRYSTALLISATION; GERMANIUM ALLOYS; METALLIC THIN FILMS; OPTICAL STORAGE; RAMAN SPECTRA OF INORGANIC SOLIDS; SEGREGATION; STOICHIOMETRY; ***TELLURIUM*** ALLOYS; ***X*** -RAY ***DIFFRACTION*** EXAMINATION OF MATERIALS

ST crystal structure; performance; ***optical recording media*** ; thermal evaporation; Raman spectroscopy; ***X-ray diffraction*** ; non-stoichiometric atomic ratios; phase segregation; ***Te-Ge-Sb thin*** *** films*** ; ***Te-Ge***

CHI TeGeSb ss, Ge ss, Sb ss, Te ss; TeGe bin, Ge bin, Te bin

ET Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Te-Ge-Sb; Ge*Te; Ge sy 2; sy 2; Te sy 2; Te-Ge; Te50Ge50; Te cp; cp; Ge cp; Ge*Sb; Sb sy 2; Ge:Sb; Sb doping; doped materials; TeGeSb; Sb cp; Ge; Sb; Te; TeGe

L8 ANSWER 67 OF 75 INSPEC (C) 2006 IEE on STN

AN 1990:3627558 INSPEC DN A90074252; B90036951

TI Studies of crystallization processes of amorphous chalcogenide thin films with electrical measurements.
AU Nasu, T.; Naito, H.; Kurosawa, K. (Dept. of Electron., Univ. of Osaka Prefecture, Japan); Matsushita, T.; Okuda, M.
SO Japanese Journal of Applied Physics, Supplement (1989) vol.28, suppl.28-3, p.285-8. 5 refs.
CODEN: JJPYA5 ISSN: 0021-4922
Conference: International Symposium on Optical Memory. Kobe, Japan, 26-28 Sept 1989
Sponsor(s): Japan Soc. Appl. Phys.; Inst. Electron. Inf. Commun. Eng.; Optoelectron. Ind. Technol. Dev. Assoc
DT Conference Article; Journal
TC Experimental
CY Japan
LA English
AB Electrical measurements have been carried out to elucidate the crystallization processes of amorphous ***Te*** :Se thin films, which have been applied to ***information*** storage ***media*** . A model has been proposed to explain the conductivity changes of the material with time at various temperatures, in which surface-induced crystallization plays a key role. The surface-induced crystallization velocity and activation energy are determined to be 4.2*10-2 nm/s at 338 K and 1.75 eV, respectively. The influence of aging on the crystallization is also examined.
CC A6140 Amorphous and polymeric materials; A7360F Semiconductor films; A7220F Low-field transport and mobility; piezoresistance; A7280N Amorphous and glassy semiconductors; A4230N Optical storage and retrieval; A6855 Thin film growth, structure, and epitaxy; A4270F Other optical materials; B4110 Optical materials; B4120 Optical storage and retrieval; B2520F Amorphous and glassy semiconductors
CT CHALCOGENIDE GLASSES; CRYSTALLISATION; ELECTRICAL CONDUCTIVITY OF AMORPHOUS SEMICONDUCTORS AND INSULATORS; OPTICAL FILMS; OPTICAL STORAGE; ***TELLURIUM*** COMPOUNDS; VACUUM DEPOSITED COATINGS
ST ***X-ray diffraction*** ; optical storage; annealing; vacuum evaporation; amorphous chalcogenide thin films; electrical measurements; ***information storage media*** ; conductivity; surface-induced crystallization velocity; activation energy; aging; 228 K; TeSe thin films
CHI TeSe bin, Se bin, Te bin
PHP temperature 2.28E+02 K
ET Se*Te; Se sy 2; sy 2; Te sy 2; Te:Se; Se doping; doped materials; TeSe; Te cp; cp; Se cp; Se; Te

L8 ANSWER 68 OF 75 INSPEC (C) 2006 IEE on STN
AN 1989:3498548 INSPEC DN A89142193
TI Local structures and annealing behavior of amorphous TexC1-x alloys prepared by RF sputtering.
AU Tsunetomo, K.; Sugishima, T.; Imura, T.; Osaka, Y. (Dept. of Electr. Eng., Hiroshima Univ., Japan); Sakai, H.
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers & Short Notes) (April 1989) vol.28, no.4, p.671-7. 15 refs.
CODEN: JAPNDE ISSN: 0021-4922
DT Journal
TC Experimental
CY Japan
LA English
AB The local structure and annealing behavior of amorphous TexC1-x films (x=0.1, 0.17 and 0.51) prepared by RF sputtering are investigated in order to examine the possibility of ***optical*** recording ***media*** . Measurements of ***optical*** absorption, ***X*** -ray ***diffraction*** , Raman scattering, and transmission electron microscopy reveal that the amorphous TexC1-x films consist of amorphous ***Te*** clusters about 30 A in diameter embedded in amorphous carbon. Mosssbauer spectroscopy of 125Te and 129I is also applied to these alloy films in order to elucidate the local environment of the ***tellurium*** atom. The Mossbauer spectra suggest that the interaction between ***Te*** chains in the amorphous clusters is weak compared to that in the crystalline ***Te*** and decreases with decreasing ***Te*** content.
CC A6855 Thin film growth, structure, and epitaxy; A8140G Other heat and thermomechanical treatments; A7865J Nonmetals; A7830L Disordered solids; A7680 Mossbauer effect; other gamma-ray spectroscopy
CT AMORPHOUS STATE; ANNEALING; LIGHT ABSORPTION; MOSSBAUER EFFECT;

NONCRYSTALLINE STATE STRUCTURE; OPTICAL FILMS; RAMAN SPECTRA OF INORGANIC SOLIDS; SPUTTERED COATINGS; ***TELLURIUM*** COMPOUNDS; TRANSMISSION ELECTRON MICROSCOPE EXAMINATION OF MATERIALS; ***X*** -RAY ***DIFFRACTION*** EXAMINATION OF MATERIALS

ST annealing behavior; RF sputtering; local structure; ***optical recording*** *** media*** ; optical absorption; ***X-ray diffraction*** ; Raman scattering; transmission electron microscopy; ***amorphous Te*** *** clusters*** ; Mosssbauer spectroscopy; 125Te; 129I; amorphous TexC1-x films

CHI TeC bin, Te bin, C bin

ET C*Te; TexC1-x; Te cp; cp; C cp; Te; 125Te; is; Te is; I; 129I; I is; TeC

L8 ANSWER 69 OF 75 INSPEC (C) 2006 IEE on STN

AN 1989:3459995 INSPEC DN A89106757; B89062141; C89055482

TI High speed overwritable phase-change ***optical*** ***disk*** with GeTe-Sb2Te3 thin films.

AU Yamada, N. (Dev. Res. Lab., Matsushita Electr. Ind. Co. Ltd., Osaka, Japan); Nishiuchi, K.; Sanai, S.; Nagata, K.; Takao, M.; Akahira, N.

SO National Technical Report (April 1989) vol.35, no.2, p.110-17. 11 refs.
CODEN: NTROAV ISSN: 0028-0291

DT Journal

TC Practical

CY Japan

LA Japanese

AB It was found that Ge-Sb- ***Te*** ternary alloy films around GeTe-Sb2Te3 pseudo-binary compositions show reversible phase transition between the amorphous and crystalline state by laser irradiation for a very short time of less than 100 nsec, causing a great change in the optical characteristics. Through the DSC and ***X*** -ray ***diffraction*** studies, it was observed that the crystallization process is common in the range of the above composition, and that a meta-stable FCC structure appears at the early stage of the crystallization. Because the optical changes almost finish at this stage, it is considered that this process dominates the laser irradiation time required for the ***optical*** changes. An ***optical*** ***disk*** using a Ge2Sb2Tel thin film as the representative composition was fabricated on trial to confirm direct overwrite by means of a single laser beam. It was also confirmed that a high overwriting frequency of 15 MHz is possible at 30 m/sec linear velocity only by modulating the laser power between the recording level (21 mW) and the erasing level (9 mW). A CNR of more than 50 dB and an erasability of -26 dB were obtained stably during the 105 cycle overwriting test.

CC A4230N Optical storage and retrieval; A4270 Optical materials; B4120 Optical storage and retrieval; B4110 Optical materials; C5320K Optical storage

CT ANTIMONY COMPOUNDS; GERMANIUM COMPOUNDS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; SEMICONDUCTOR THIN FILMS

ST ***high speed overwritable phase-change optical disk*** ; ternary alloy films; pseudo-binary compositions; reversible phase transition; amorphous; crystalline; laser irradiation; DSC; ***X-ray diffraction*** ; crystallization process; meta-stable FCC structure; optical changes; direct overwrite; laser beam; linear velocity; laser power; recording level; erasing level; CNR; 15 MHz; 21 mW; 9 mW; 50 dB; -26 dB; GeTe-Sb2Te3 thin films

CHI GeTeSb2Te3 ss, Sb2 ss, Te3 ss, Ge ss, Sb ss, Te ss

PHP frequency 1.5E+07 Hz; power 2.1E-02 W; power 9.0E-03 W; gain 5.0E+01 dB; loss -2.6E+01 dB

ET Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; GeTe; Ge cp; cp; Te cp; Sb2Te3; Sb cp; GeTe-Sb2Te3; Ge-Sb-Te; Ge2Sb2Tel; B; GeTeSb2Te; Sb; Te; Ge

L8 ANSWER 70 OF 75 INSPEC (C) 2006 IEE on STN

AN 1989:3271582 INSPEC DN A89001183; B89002746

TI Stability of ***Te*** -Cu amorphous alloy thin films for optical recording.

AU Carcia, P.F. (Central Res. & Dev. Dept., E.I. du Pont de Nemours & Co. Inc., Wilmington, DE, USA); Kalk, F.D.; Bierstedt, P.E.; Ferretti, A.; Jones, G.A.; Swartzfager, D.G.

SO Journal of Applied Physics (15 Aug. 1988) vol.64, no.4, p.1671-8. 13 refs.
Price: CCCC 0021-8979/88/161671-08$02.40
CODEN: JAPIAU ISSN: 0021-8979

DT Journal

TC Experimental

CY United States
LA English
AB The authors have studied the structure and optical stability of ***Te*** -Cu thin film alloy candidates for write-once optical recording. Films prepared by RF diode sputtering with 20-50 at.% Cu are amorphous, as-sputtered. One of these, Te65Cu35, has a relatively high crystallization temperature (150 degrees C), as determined by ***X*** -ray ***diffraction*** . Near the eutectic composition (approximately 29 at.% Cu), alloy films have stable optical properties after accelerated aging at 60 degrees C and 85% relative humidity. The mechanism for film stability near the eutectic was studied by X-ray photoelectron spectroscopy and depth profiling using ion scattering spectroscopy. They found that a Cu-enriched surface oxide, formed at ambient conditions, passivates the film and is responsible for its subsequent stability after accelerated aging. They also demonstrated that a 14 in. diam, multilayer ***optical*** ***disk*** with a Te65Cu35 recording ***medium*** exhibits excellent linearity for 3 and 8 MHz pulses, good written pulse length stability, and high signal-to-noise ratio. Thus, a ***Te*** -Cu recording medium can effectively use run-length-limited codes, which allow very high data storage capacity and data transfer rates.
CC A4270F Other optical materials; A4230N Optical storage and retrieval; B4120 Optical storage and retrieval; B4110 Optical materials
CT AGEING; COPPER ALLOYS; CRYSTALLISATION; ION-SURFACE IMPACT; OPTICAL FILMS; OPTICAL STORAGE; SPUTTERED COATINGS; ***TELLURIUM*** ALLOYS; ***X*** -RAY ***DIFFRACTION*** EXAMINATION OF MATERIALS; X-RAY PHOTOELECTRON SPECTRA
ST passivation; amorphous alloy thin films; structure; optical stability; write-once optical recording; RF diode sputtering; crystallization temperature; ***X-ray diffraction*** ; eutectic composition; aging; humidity; X-ray photoelectron spectroscopy; depth profiling; ion scattering spectroscopy; surface oxide; ***multilayer optical disk*** ; linearity; pulse length stability; signal-to-noise ratio; Te65Cu35
CHI Te65Cu35 bin, Cu35 bin, Te65 bin, Cu bin, Te bin
ET Cu*Te; Cu sy 2; sy 2; Te sy 2; Te-Cu; Cu; Te65Cu35; Te cp; cp; Cu cp; C; Te65Cu; Te

L8 ANSWER 71 OF 75 INSPEC (C) 2006 IEE on STN
AN 1988:3141904 INSPEC DN A88075807
TI Optical absorption changes of amorphous films based on ***tellurium*** dioxide and rare earth metal oxides.
AU Marinov, M.R.; Kozhukharov, V.S.; Dimitrov, D.Z. (Fac. of Inorg. Chem., Inst. of Chem. Technol., Sofia, Bulgaria)
SO Journal of Materials Science Letters (Jan. 1988) vol.7, no.1, p.91-2. 6 refs.
Price: CCCC 0261-8028/88/$03.00+.12
CODEN: JMSLD5 ISSN: 0261-8028
DT Journal
TC Experimental
CY United Kingdom
LA English
AB The authors' study aims to investigate the changes in optical absorption of amorphous thin films on the bases of ***tellurium*** dioxide and rare earth metal oxides (RnOm) as function of the thermal treatment, as well as the definition of some film structural characteristics (***X*** -ray ***diffraction*** and ***X*** -ray photoelectron spectroscopy).
CC A4270F Other optical materials; A7830L Disordered solids; A7840H Other nonmetals; A7865J Nonmetals
CT AMORPHOUS STATE; COLOUR; HEAT TREATMENT; INFRARED SPECTRA OF INORGANIC SOLIDS; NONCRYSTALLINE STATE STRUCTURE; OPTICAL FILMS; RARE EARTH COMPOUNDS; ***TELLURIUM*** COMPOUNDS; VISIBLE AND ULTRAVIOLET SPECTRA OF INORGANIC SOLIDS; ***X*** -RAY ***DIFFRACTION*** EXAMINATION OF MATERIALS; X-RAY PHOTOELECTRON SPECTRA
ST thermally induced phase change; amorphous to partial crystalline state; colour; suboxide thin films; binding energy; visible spectra; ***optical*** *** information recording media*** ; near infrared spectra; rare earth metal oxides; optical absorption; amorphous thin films; thermal treatment; film structural characteristics; ***X-ray diffraction*** ; X-ray photoelectron spectroscopy; 0 to 1 micron; TeO2-La2O3; TeO2-Nd2O3; TeO2-Pr6O11; TeO2-Eu2O3; TeO2-CeO2; TeO2-Sm2O3; TeO2-Tb4O7; TeO2-Gd2O3; TeO2-Dy2O3; TeO2-Ho2O3; TeO2-Er2O3; TeO2; TeO2-Tm2O3; TeO2-Yb2O3; TeO2-Lu2O3; TeO2-Sc2O3

CHI TeO2La2O3 ss, La2 ss, La ss, O2 ss, O3 ss, Te ss, O ss; TeO2Nd2O3 ss, Nd2 ss, Nd ss, O2 ss, O3 ss, Te ss, O ss; TeO2Pr6O11 ss, O11 ss, Pr6 ss, O2 ss, Pr ss, Te ss, O ss; TeO2Eu2O3 ss, Eu2 ss, Eu ss, O2 ss, O3 ss, Te ss, O ss; TeO2CeO2 ss, Ce ss, O2 ss, Te ss, O ss; TeO2Sm2O3 ss, Sm2 ss, O2 ss, O3 ss, Sm ss, Te ss, O ss; TeO2Tb4O7 ss, Tb4 ss, O2 ss, O7 ss, Tb ss, Te ss, O ss; TeO2Gd2O3 ss, Gd2 ss, Gd ss, O2 ss, O3 ss, Te ss, O ss; TeO2Dy2O3 ss, Dy2 ss, Dy ss, O2 ss, O3 ss, Te ss, O ss; TeO2Ho2O3 ss, Ho2 ss, Ho ss, O2 ss, O3 ss, Te ss, O ss; TeO2Er2O3 ss, Er2 ss, Er ss, O2 ss, O3 ss, Te ss, O ss; TeO2 bin, O2 bin, Te bin, O bin; TeO2Tm2O3 ss, Tm2 ss, O2 ss, O3 ss, Te ss, Tm ss, O ss; TeO2Yb2O3 ss, Yb2 ss, O2 ss, O3 ss, Te ss, Yb ss, O ss; TeO2Lu2O3 ss, Lu2 ss, Lu ss, O2 ss, O3 ss, Te ss, O ss; TeO2Sc2O3 ss, Sc2 ss, O2 ss, O3 ss, Sc ss, Te ss, O ss

PHP wavelength 0.0E+00 to 1.0E-06 m

ET La*O*Te; La sy 3; sy 3; O sy 3; Te sy 3; TeO2; Te cp; cp; O cp; La2O3; La cp; TeO2-La2O3; Nd*O*Te; Nd sy 3; Nd2O3; Nd cp; TeO2-Nd2O3; O*Pr*Te; Pr sy 3; Pr6O11; Pr cp; TeO2-Pr6O11; Eu*O*Te; Eu sy 3; Eu2O3; Eu cp; TeO2-Eu2O3; Ce*O*Te; Ce sy 3; CeO2; Ce cp; TeO2-CeO2; O*Sm*Te; Sm sy 3; Sm2O3; Sm cp; TeO2-Sm2O3; O*Tb*Te; Tb sy 3; Tb4O7; Tb cp; TeO2-Tb4O7; Gd*O*Te; Gd sy 3; Gd2O3; Gd cp; TeO2-Gd2O3; Dy*O*Te; Dy sy 3; Dy2O3; Dy cp; TeO2-Dy2O3; Ho*O*Te; Ho sy 3; Ho2O3; Ho cp; TeO2-Ho2O3; Er*O*Te; Er sy 3; Er2O3; Er cp; TeO2-Er2O3; O*Te; O*Te*Tm; Tm sy 3; Tm2O3; Tm cp; TeO2-Tm2O3; O*Te*Yb; Yb2O3; Yb cp; TeO2-Yb2O3; Lu*O*Te; Lu2O3; Lu cp; TeO2-Lu2O3; O*Sc*Te; Sc sy 3; Sc2O3; Sc cp; TeO2-Sc2O3; TeO2La2O; La; O; Te; TeO2Nd2O; Nd; TeO2Pr6O; Pr; TeO2Eu2O; Eu; TeO2CeO; Ce; TeO2Sm2O; Sm; TeO2Tb4O; Tb; TeO2Gd2O; Gd; TeO2Dy2O; Dy; TeO2Ho2O; Ho; TeO2Er2O; Er; TeO; TeO2Tm2O; Tm; TeO2Yb2O; Yb; TeO2Lu2O; Lu; TeO2Sc2O; Sc

L8 ANSWER 72 OF 75 INSPEC (C) 2006 IEE on STN

AN 1987:2911439 INSPEC DN A87076706; B87038724; C87040626

TI ***Te*** -Ge-Sn-Au phase change recording film for ***optical*** ***disk*** .

AU Yamada, N.; Takao, M.; Takenaga, M. (Central Res. Labs., Matsushita Electr. Ind. Co. Ltd., Osaka, Japan)

SO Proceedings of the SPIE - The International Society for Optical Engineering (1986) vol.695, p.79-85. 9 refs.
CODEN: PSISDG ISSN: 0277-786X
Conference: Optical Mass Data Storage II. San Diego, CA, USA, 18-22 Aug 1986
Sponsor(s): SPIE

DT Conference Article; Journal

TC Experimental

CY United States

LA English

AB ***Te*** -Ge-Sn-Au thin films were studied for phase change type rewritable disk media, in order to obtain a fast crystallization speed and thermal stability. Films were prepared by the co-evaporation method. It was found that through static record/erase measurements the threshold crystallizing pulse duration of a Te60Ge4Sn11Au25 film was only 1 mu sec at 2 mW of laser power; that is less than one tenth compared with that of Te80Ge5Sn15 film, while the threshold amorphizing laser power of them were almost the same, 6 mW at 0.2 mu sec of pulse duration regardless of Au concentration. Its crystallization temperature of about 130 degrees C was enough to maintain the good thermal stability. Through DSC, ***X*** -ray and electron ***diffraction*** studies, the first appearance of crystalline state in the crystallization process, corresponding to the drastic change in optical property, showed only one phase of metastable simple cubic structure. It was concluded that the appearance of this structure made the crystallization speed higher. The obtained thin film was a candidate for a simultaneously erasable and recordable material.

CC A4230N Optical storage and retrieval; A4270F Other optical materials; A6155H Alloys; A6180B Ultraviolet, visible and infrared radiation; A6855 Thin film growth, structure, and epitaxy; B4110 Optical materials; C5320K Optical storage

CT AMORPHISATION; CRYSTAL ATOMIC STRUCTURE OF ALLOYS; CRYSTALLISATION; ELECTRON DIFFRACTION EXAMINATION OF MATERIALS; GERMANIUM ALLOYS; GOLD ALLOYS; LASER BEAM EFFECTS; METALLIC THIN FILMS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FILMS; STABILITY; STORAGE MEDIA; ***TELLURIUM*** ALLOYS; THERMAL ANALYSIS; TIN ALLOYS; ***X*** -RAY ***DIFFRACTION*** EXAMINATION OF MATERIALS

ST differential scanning calorimetry; ***X-ray diffraction*** ; recording film; ***optical disk*** ; phase change type rewritable disk media; crystallization speed; thermal stability; co-evaporation method; static

record/erase measurements; threshold crystallizing pulse duration; threshold amorphizing laser power; crystallization temperature; electron diffraction; metastable simple cubic structure; 1 mus; 2 mW; 0.2 mus; 6 mW; 130 degC; TeGeSnAu thin film
CHI TeGeSnAu ss, Au ss, Ge ss, Sn ss, Te ss
PHP time 1.0E-06 s; power 2.0E-03 W; time 2.0E-07 s; power 6.0E-03 W; temperature 4.03E+02 K
ET Au*Ge*Sn*Te; Au sy 4; sy 4; Ge sy 4; Sn sy 4; Te sy 4; Te-Ge-Sn-Au; Te60Ge4Sn11Au; Te cp; cp; Ge cp; Sn cp; Au cp; Ge*Sn*Te; Ge sy 3; sy 3; Sn sy 3; Te sy 3; Te80Ge5Sn; Au; C; TeGeSnAu; Ge; Sn; Te

L8 ANSWER 73 OF 75 INSPEC (C) 2006 IEE on STN
AN 1987:2889055 INSPEC DN A87068801
TI Effect of Ge addition on Ga-Se- ***Te*** system reversible ***optical*** recording ***media*** .
AU Matsushita, T.; Suzuki, A.; Nakau, T. (Coll. of Eng., Osaka Industrial Univ., Japan); Okuda, M.; Rhee, J.C.; Naito, H.
SO Japanese Journal of Applied Physics, Part 2 (Letters) (Jan. 1987) vol.26, no.1, p.L62-4
CODEN: JAPLD8 ISSN: 0021-4922
DT Journal
TC Experimental
CY Japan
LA English
AB A reversible ***optical*** storage ***medium*** capable of more than 104 write/erase cycles has been realized using a Te0.8(Ga0.05Se0.95)+5 wt.% Ge film (approximately 1000 AA). For this composition, a peak temperature of an exothermic curve of 156 degrees C and an activation energy from Kissinger's plot of 2.24 eV were obtained using a differential scanning calorimeter. In this film, a peak of a GeTe crystal was identified by ***X*** -ray ***diffraction*** . To investigate changes of the film surface induced through an annealing (200 degrees C+100 mW/cm2Xe, approximately 1 min), a high resolution SEM observation was carried out; while cracks preventing the high reversibility of write/erase cycles were generated for the GeTe film, the cracks were not recognized for the Te0.8(Ga0.05Se0.95)0.2+5 wt.% Ge film.
CC A4230N Optical storage and retrieval; A4270F Other optical materials
CT GALLIUM COMPOUNDS; GERMANIUM COMPOUNDS; OPTICAL FILMS; OPTICAL STORAGE; SCANNING ELECTRON MICROSCOPE EXAMINATION OF MATERIALS; THERMAL ANALYSIS; ***X*** -RAY ***DIFFRACTION*** EXAMINATION OF MATERIALS
ST phase change material; reversible optical recording; reversible optical storage; write/erase cycles; activation energy; differential scanning calorimeter; ***X-ray diffraction*** ; film surface; annealing; high resolution SEM observation; cracks; ***Ga-Se-Te-Ge film***
CHI GaSeTeGe ss, Ga ss, Ge ss, Se ss, Te ss
ET Ge; Ga*Se*Te; Ga sy 3; sy 3; Se sy 3; Te sy 3; Ga-Se-Te; Te0.8(Ga0.05Se0.95); Te cp; cp; Ga cp; Se cp; C; Ge*Te; Ge sy 2; sy 2; Te sy 2; GeTe; Ge cp; Xe; 2Xe; is; Xe is; Te0.8(Ga0.05Se0.95)0.2; Ga*Ge*Se*Te; Ga sy 4; sy 4; Ge sy 4; Se sy 4; Te sy 4; Ga-Se-Te-Ge; GaSeTeGe; Ga; Se; Te

L8 ANSWER 74 OF 75 INSPEC (C) 2006 IEE on STN
AN 1987:2846279 INSPEC DN A87044610
TI Nanosecond pulsed laser-induced segregation of ***Te*** in TeOx films.
AU Lee, W.Y.; Coufal, H.; Davis, C.R.; Jipson, V.; Lim, G.; Parrish, W.; Sequeda, F. (IBM Almaden Res. Center, San Jose, CA, USA); Davis, R.E.
SO Journal of Vacuum Science & Technology A (Vacuum, Surfaces, and Films) (Nov.-Dec. 1986) vol.4, no.6, p.2988-92. 12 refs.
Price: CCCC 0734-2101/86/062988-05$01.00
CODEN: JVTAD6 ISSN: 0734-2101
Conference: Proceedings of the 13th International Conference on Metallurgical Coatings. San Diego, CA, USA, 7-11 April 1986
Sponsor(s): American Vacuum Soc.; American Soc. Metals; Int. Union Vacuum Sci.; et al
DT Conference Article; Journal
TC Experimental
CY United States
LA English
AB Thin films of TeOx deposited by coevaporation of ***Te*** and TeO2 or by reactive sputtering of ***Te*** in the presence of Ar and O2 are amorphous as-deposited and are spatially homogeneous mixtures of ***Te*** and TeO2. Irradiation of these films by a nanosecond laser

pulse leads to a substantial change in the optical properties (e.g., increase in the reflectivity) of the films. Electron spectroscopy for chemical analysis depth profiling, Rutherford backscattering, and ***X*** -ray ***diffraction*** techniques were used to analyze these films before and after laser irradiation. The results obtained indicated that the segregation of ***Te*** from TeO2 matrix is responsible for most of the observed optical property changes. The segregation of ***Te*** results in the formation of a nearly pure ***Te*** layer in the hottest region of the film without changing the overall film composition. A model based on melting of ***Te*** and TeO2 composites, followed by segregation and crystallization of ***Te*** is proposed to describe the nanosecond pulsed-laser irradiation of TeOx thin films. The possible effects of ***Te*** segregation on the ***optical*** recording characteristics of TeOx based ***media*** are also discussed.

CC A6180B Ultraviolet, visible and infrared radiation; A6470D Solid-liquid transitions; A6475 Solubility, segregation, and mixing; A7920N Atom, molecule, and ion impact; A7960E Semiconductors and insulators

CT CRYSTALLISATION; INSULATING THIN FILMS; LASER BEAM EFFECTS; MELTING; PARTICLE BACKSCATTERING; SEGREGATION; ***TELLURIUM*** COMPOUNDS; ***X*** -RAY ***DIFFRACTION*** EXAMINATION OF MATERIALS; X-RAY PHOTOELECTRON SPECTRA

ST ESCA; pulsed laser-induced segregation; coevaporation; reactive sputtering; amorphous; spatially homogeneous mixtures; nanosecond laser pulse; optical properties; reflectivity; depth profiling; Rutherford backscattering; ***X-ray diffraction*** ; melting; crystallization; optical recording characteristics; TeOx films

CHI TeO bin, Te bin, O bin

ET Te; O*Te; TeOx; Te cp; cp; O cp; TeO2; Ar; O2; TeO; O

L8 ANSWER 75 OF 75 INSPEC (C) 2006 IEE on STN

AN 1983:2023776 INSPEC DN A83038933

TI Thermal changes of optical properties observed in some suboxide thin films.

AU Ohta, T.; Takenaga, M.; Akahira, N.; Yamashita, T. (Materials Res. Lab., Matsushita Electric Industrial Co. Ltd., Osaka, Japan)

SO Journal of Applied Physics (Dec. 1982) vol.53, no.12, p.8497-500. 10 refs.
Price: CCCC 0021-8979/82/128497-04$02.40
CODEN: JAPIAU ISSN: 0021-8979

DT Journal

TC Experimental

CY United States

LA English

AB Suboxide thin films of SbOx, TeOx, MoOx, and GeOx (x is smaller than the stoichiometric value for each component) were found to have the property of showing a critical change in their absorption coefficients and refractive indices at elevated temperatures. The thin-film samples were prepared by evaporating a mixture of the stoichiometric oxide powder and a deoxidization metal powder such as tungsten. The critical temperatures of these thin films are 150, 120, 150, and 280 degrees C, respectively. The absorption coefficients before and after the heat treatment are 2.5*104 (before) and 6.1*104 (after), 8*104 and 1.0*105, 5.6*103 and 1.1*104, and 4.9*104 and 1.8*105 cm-1, respectively. Their refractive indices are 1.8 (before) and 1.9 (after), 3.1 and 3.5, 1.8 and 2.1, and 2.5 and 2.8, respectively. As determined by ***X*** -ray ***diffraction*** analysis, these thin films are composed of very small metal grains and stoichiometric oxide grains. The thermal changes accompanied by the optical constant changes are mainly due to structural changes in the metal grains. These thin films are concluded to have the feasibility of application to ***optical*** ***disk*** memories of the ***laser*** heat-mode type.

CC A4230N Optical storage and retrieval; A7820D Optical constants and parameters; A7820N Thermo-optical effects; A7865J Nonmetals

CT ANTIMONY COMPOUNDS; GERMANIUM COMPOUNDS; MOLYBDENUM COMPOUNDS; OPTICAL CONSTANTS; OPTICAL STORAGE; REFRACTIVE INDEX; ***TELLURIUM*** COMPOUNDS; THERMO-OPTICAL EFFECTS

ST grain structure; thermal changes; suboxide thin films; SbOx; TeOx; MoOx; GeOx; absorption coefficients; refractive indices; elevated temperatures; heat treatment; ***X-ray diffraction analysis*** ; structural changes; ***optical disk memories*** ; laser heat-mode

ET O*Sb; SbOx; Sb cp; cp; O cp; O*Te; TeOx; Te cp; Mo*O; MoOx; Mo cp; Ge*O; GeOx; Ge cp; C

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=> s l5 and spacing
L9           9 L5 AND SPACING

=> s l5 and (spacing or length or cell)
L10         38 L5 AND (SPACING OR LENGTH OR CELL)

=> d all 1-38
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L10 ANSWER 1 OF 38 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:400736 CAPLUS
DN 143:78892
ED Entered STN: 11 May 2005
TI Structure and properties of poly(vinyl alcohol) hydrogels obtained by freeze/thaw techniques
AU Ricciardi, Rosa; Auriemma, Finizia; De Rosa, Claudio
CS Dipartimento di Chimica, Universita di Napoli "Federico II", Naples, 80126, Italy
SO Macromolecular Symposia (2005), 222(Polymer-Solvent Complexes and Intercalates V), 49-63
CODEN: MSYMEC; ISSN: 1022-1360
PB Wiley-VCH Verlag GmbH & Co. KGaA
DT Journal
LA English
CC 37-5 (Plastics Manufacture and Processing)
AB The relationships between the structure and the viscoelastic properties of freeze/thaw PVA hydrogels obtained by repeatedly freezing and thawing dil. solns. of PVA in D2O (11% PVA) in as-prepd. and rehydrated states are studied. Our results indicate that the PVA chains and solvent mols. are organized at different hierarchical ***length*** scales, which include the presence of micro- and macro-pores, into a network scaffolding. The porous network is ensured by the presence of crystallites, which act as knots interconnected by portions of PVA chains swollen by the solvent. ***X*** -ray ***diffraction*** and SANS techniques are used to obtain structural ***information*** at short (angstroms) and ***medium*** (nanometers) ranges of ***length*** scales, concerning the crystallinity, the size of small cryst. aggregates and the av. distance between crystallites in PVA hydrogels. Indirect information concerning the structural organization on the large ***length*** scales (microns) are provided by viscoelastic measurements. The dynamic shear elastic moduli at low frequency and low strain amplitude, G', are detd. and related to the degree of crystallinity. These data indicate that a min. crystallinity of 1% is required for these PVA samples to exhibit gel behavior and have allowed obtaining the order of magnitude of the av. mesh size in these gels. Finally, the neg. effect of aging, inducing worse phys. and mech. properties in these systems, may be prevented using a drying/re-hydration protocol able to keep the phys. properties of the as-prepd. PVA hydrogels.
ST polyvinyl alc hydrogel freeze thaw prepn structure viscoelastic property
IT Freezing
(-thawing; relationships between structure and viscoelastic properties of poly(vinyl alc.) hydrogels prepd. by freeze/thaw techniques)
IT Viscoelasticity
(dynamic; of poly(vinyl alc.) hydrogels prepd. by freeze/thaw techniques)
IT X-ray diffractometry
(for study on relationships between structure and viscoelastic properties of poly(vinyl alc.) hydrogels prepd. by freeze/thaw techniques)
IT Storage modulus
(of poly(vinyl alc.) hydrogels prepd. by freeze/thaw techniques)
IT Hydrogels
(relationships between structure and viscoelastic properties of poly(vinyl alc.) hydrogels prepd. by freeze/thaw techniques)
IT Neutron scattering
(small-angle; for study on relationships between structure and viscoelastic properties of poly(vinyl alc.) hydrogels prepd. by freeze/thaw techniques)
IT 9002-89-5, Poly(vinyl alcohol)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)

(relationships between structure and viscoelastic properties of poly(vinyl alc.) hydrogels prepd. by freeze/thaw techniques)
RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L10 ANSWER 2 OF 38 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:224004 CAPLUS
DN 143:244486
ED Entered STN: 14 Mar 2005
TI Protocols for production of selenomethionine-labeled proteins in 2-L polyethylene terephthalate bottles using auto-induction medium
AU Sreenath, Hassan K.; Bingman, Craig A.; Buchan, Blake W.; Seder, Kory D.; Burns, Brendan T.; Geetha, Holalkere V.; Jeon, Won Bae; Vojtik, Frank C.; Aceti, David J.; Frederick, Ronnie O.; Phillips, George N.; Fox, Brian G.
CS Department of Biochemistry, Center for Eukaryotic Structural Genomics, University of Wisconsin-Madison, Madison, WI, 53706-1549, USA
SO Protein Expression and Purification (2005), 40(2), 256-267
CODEN: PEXPEJ; ISSN: 1046-5928
PB Elsevier
DT Journal
LA English
CC 9-11 (Biochemical Methods)
AB Protocols have been developed and applied in the high-throughput prodn. of selenomethionine labeled fusion proteins using the conditional Met auxotroph Escherichia coli B834. The large-scale growth and expression uses a chem. defined auto-induction medium contg. 125 mg L-1 selenomethionine, salts and trace metals, other amino acids including 10 mg L-1 of methionine, vitamins except vitamin B12, and glucose, glycerol, and .alpha.-lactose. A schematic for a shaker rack that can hold up to twenty-four 2-L polyethylene terephthalate beverage bottles in a std. lab. refrigerated floor shaker is provided. The growth cycle from inoculation of the culture bottle through the growth, induction, and expression was timed to take .apprx.24 h. Culture growth in the auto-induction ***medium*** gave an av. final ***optical*** d. at 600 nm of .apprx.6 and an av. wet ***cell*** mass yield of .apprx.14 g from 2 L of culture in greater than 150 expression trials. A simple method for visual scoring of denaturing electrophoresis gels for total protein

expression, soly., and effectiveness of fusion protein proteolysis was developed and applied. For the favorably scored expression trials, the av. yield of purified, selenomethionine-labeled target protein obtained after proteolysis of the fusion protein was .apprx.30 mg. Anal. by mass spectrometry showed greater than 90% incorporation of selenomethionine over a .apprx.8-fold range of selenomethionine concns. in the growth medium, with higher growth rates obsd. at the lower selenomethionine concns. These protein prepns. have been utilized to solve ***X*** -ray crystal structures by multiwavelength anomalous ***diffraction*** phasing.

ST selenomethionine fusion protein labeling culture media autoinduction
IT Plasmids
(pVP13; selenomethionine-labeled fusion protein prodn. in polyethylene terephthalate bottles using auto-induction medium)
IT Agitation (mechanical)
Culture media
Escherichia coli
Laboratory ware
Temperature
(selenomethionine-labeled fusion protein prodn. in polyethylene terephthalate bottles using auto-induction medium)
IT Fusion proteins (chimeric proteins)
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(selenomethionine-labeled; selenomethionine-labeled fusion protein prodn. in polyethylene terephthalate bottles using auto-induction medium)
IT 1464-42-2DP, Selenomethionine, -labeled fusion proteins
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(selenomethionine-labeled fusion protein prodn. in polyethylene terephthalate bottles using auto-induction medium)
RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L10 ANSWER 3 OF 38 CAPLUS
AN 2004:905320 CAPLUS
DN 141:386460
ED Entered STN: 29 Oct 2004
TI Phase-change ***optical*** recording ***disk*** that is compatible with a high transfer rate and has superior thermal stability in an amorphous phase
IN Shingai, Hiroshi; Chihara, Hiroshi; Hirata, Hideki
PA TDK Corporation, Japan
SO U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM G11B007-24
INCL 369094000; 369288000
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004213125	A1	20041028	US 2004-829355	20040422
	JP 2004322468	A2	20041118	JP 2003-120205	20030424
PRAI	JP 2003-120205	A	20030424		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2004213125	ICM	G11B007-24
	INCL	369094000; 369288000
	IPCI	G11B0007-24 [ICM,7]
	NCL	369/094.000
	ECLA	G11B007/0045P; G11B007/243
JP 2004322468	IPCI	B41M0005-26 [ICM,7]; G11B0007-24 [ICS,7]
	FTERM	2H111/EA04; 2H111/EA23; 2H111/EA39; 2H111/FB09; 2H111/FB12; 2H111/FB20; 5D029/JA01

AB Phase-change ***optical*** recording ***disk*** is described that is compatible with a high transfer rate and has superior thermal stability

in an amorphous phase. Thus, the recording layer includes at least Sb, Tb, and Te. When indexing as a hexagonal lattice has been performed in a state corresponding to the crystal phase, the recording layer has a structure where an axial ratio c/a of a c-axis ***length*** to an a-axis ***length*** in the hexagonal lattice is between 2.590 and 2.702 inclusive.

ST rewritable ***optical*** phase change ***disk*** terbium antimony tellurium

IT Amorphous structure
Crystal morphology
Thermal stability
X -ray ***diffraction***
(phase-change ***optical*** recording ***disk*** that is compatible with high transfer rate and has superior thermal stability in amorphous phase)

IT Erasable ***optical*** ***disks***
(phase-change; phase-change ***optical*** recording ***disk*** that is compatible with high transfer rate and has superior thermal stability in amorphous phase)

IT 1327-50-0D, Antimony telluride, terbium substituted
RL: DEV (Device component use); USES (Uses)
(phase-change ***optical*** recording ***disk*** that is compatible with high transfer rate and has superior thermal stability in amorphous phase)

L10 ANSWER 4 OF 38 CAPLUS

AN 2004:457773 CAPLUS

DN 142:228093

ED Entered STN: 07 Jun 2004

TI Development of a laser-pumped X-ray laser with full spatial coherence

AU Nagashima, Keisuke; Tanaka, Momoko; Nishikino, Masaharu; Kishimoto, Maki; Kado, Masataka; Kawachi, Tetsuya; Hasegawa, Noboru; Ochi, Yoshihiro; Sukegawa, Kota; Tai, Renzhong

CS Advanced Photon Research Center, Japan Atomic Energy Research Institute, Kyoto, 619-0215, Japan

SO Purazuma, Kaku Yugo Gakkaishi (2004), 80(3), 236-240
CODEN: PKYGE5; ISSN: 0918-7928

PB Purazuma, Kaku Yugo Gakkai

DT Journal

LA English

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB A laser-pumped x-ray laser with full spatial coherence was developed for the 1st time. This x-ray laser has a wavelength of 13.9 nm and a beam divergence of 0.2 mrad. In the expt., a seeding light from the 1st ***laser*** ***medium*** was amplified in the 2nd medium, which worked as an active spatial filter. The obsd. beam divergence was close to the diffraction limited value within a factor of two. The seeding light was amplified in the 2nd medium without refraction influence. The gain region of the 2nd medium was far away from the target surface compared with that of the 1st medium, and was located in a region of considerably low d. From the measurement of visibility, the spatial coherent ***length*** was longer than the beam diam. This means that this x-ray laser beam has full spatial coherence.

ST ***x*** ray laser spatial coherence beam divergence ***diffraction*** limit

IT X-ray lasers
(development of a laser-pumped x-ray laser with full spatial coherence)

IT Optical ***diffraction***
(***diffraction*** limit; development of a laser-pumped ***x*** -ray laser with full spatial coherence)

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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L10 ANSWER 5 OF 38 CAPLUS
AN 2004:214787 CAPLUS
DN 140:261474
ED Entered STN: 18 Mar 2004
TI ***Optical*** recording ***medium***
IN Shingai, Hiroshi; Chihara, Hiroshi; Tanaka, Yoshitomo; Oishi, Masahiro; Utsunomiya, Hajime
PA TDK Corporation, Japan
SO Eur. Pat. Appl., 17 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM G11B007-24
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1398776	A1	20040317	EP 2003-19696	20030909
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2004122768	A2	20040422	JP 2003-313706	20030905
	US 2004053166	A1	20040318	US 2003-657232	20030909
	CN 1494071	A	20040505	CN 2003-159377	20030911
PRAI	JP 2002-264873	A	20020911		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 1398776	ICM	G11B007-24
	IPCI	G11B0007-24 [ICM,7]
	ECLA	G11B007/243
JP 2004122768	IPCI	B41M0005-26 [ICM,7]; G11B0007-24 [ICS,7]
	FTERM	2H111/EA05; 2H111/EA23; 2H111/FA01; 2H111/FA12; 2H111/FA14; 2H111/FA21; 2H111/FB03; 2H111/FB09; 2H111/FB12; 5D029/JA01; 5D029/JB50; 5D029/JC17; 5D029/JC20
US 2004053166	IPCI	G11B0007-24 [ICM,7]
	IPCR	G11B0007-24 [I,C]; G11B0007-243 [I,A]
	NCL	430/270.130
	ECLA	G11B007/243
CN 1494071	IPCI	G11B0007-24 [ICM,7]

AB An ***optical*** recording ***medium*** according to the present invention includes a phase change recording layer where reversible phase changes between a crystal phase and an amorphous phase are used, wherein the recording layer includes at least Sb, Mn, and Te and, in a state corresponding to the crystal phase, has a structure where one diffracted ray is detected by ***X*** -ray ***diffraction*** as being present in resp. ranges of ***spacings*** (A) of 3.10.+-.0.03, 2.25.+-.0.03, and 2.15.+-.0.03, in a range of between 3.13 and 2.12 ***spacing*** inclusive, with diffracted rays not being detected in other ranges within the 3.13 to 2.12 ***spacing*** range. Accordingly, the ***optical*** recording ***medium*** can be reliably crystd. even when the irradn. time of laser light is short, and also has superior thermal stability in an amorphous state.
ST ***optical*** recording ***medium***
IT ***Optical*** recording
Optical recording materials

X -ray ***diffraction***
(***optical*** recording ***medium***)
IT 7439-96-5, Manganese, uses 7440-36-0, Antimony, uses 13494-80-9, Tellurium, uses
RL: DEV (Device component use); USES (Uses)
(***optical*** recording ***medium*** contg.)
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Ando, K; US 6383595 B1 2002
(2) Anon; PATENT ABSTRACTS OF JAPAN 1990, V014(424), PM-1024
(3) Handa, T; US 5498507 A 1996
(4) Hirotsune, A; US 5912104 A 1999 CAPLUS
(5) Inaba, R; US 5569517 A 1996
(6) Kosuda, M; US 6096399 A 2000
(7) Matsushita Electric Ind Co Ltd; EP 1132904 A 2001 CAPLUS
(8) Mitsubishi Chem Corp; EP 1143432 A 2001 CAPLUS
(9) Ricoh Kk; EP 1260973 A 2002 CAPLUS
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(11) Tdk Corp; EP 1281537 A 2003 CAPLUS
(12) Toshiba Corp; JP 02167790 A 1990 CAPLUS
(13) Watanabe, K; US 4460636 A 1984 CAPLUS

AN 2003:116261 CAPLUS
DN 138:290509
ED Entered STN: 14 Feb 2003
TI Equation of state of stishovite to lower mantle pressures
AU Andrault, Denis; Angel, Ross J.; Mosenfelder, Jed L.; Le Bihan, Tristan
CS Laboratoire des Geomateriaux, Institut de Physique du Globe, Universite Paris 7, Paris, Fr.
SO American Mineralogist (2003), 88(2-3), 301-307
CODEN: AMMIAY; ISSN: 0003-004X
PB Mineralogical Society of America
DT Journal
LA English
CC 53-1 (Mineralogical and Geological Chemistry)
Section cross-reference(s): 75
AB We performed new diffraction expts. to clarify the equation of state (EoS) of stishovite after we suspected systematic errors in previous exptl. reports. Using diamond anvil ***cells*** , we repeated both single-crystal ***X*** -ray ***diffraction*** measurements under hydrostatic conditions and powder ***diffraction*** measurements using the ***laser*** -annealing technique and NaCl pressure ***medium*** . The major improvement is the increase in precision of the pressure detn. using the quartz and NaCl equations of state. Using both sets of data, the stishovite bulk moduli were refined to K0 = 309.9(1.1) GPa and K'0 = 4.59(0.23). We also reinvestigated the mechanism of the phase transformation to the CaCl2-structured polymorph of SiO2 at about 60 GPa. We confirm no vol. discontinuity at the transition pressure, but the CaCl2 form appears slightly more compressible than the rutile-structured form of SiO2. This change in compression behavior is used for quant. analyses of the spontaneous strains of the pressure-induced phase transition.
ST state equation stishovite lower mantle
IT Elasticity
Equation of state
Structural phase transition
(equation of state of stishovite to lower mantle pressures)
IT Mantle (earth)
(lower; equation of state of stishovite to lower mantle pressures)
IT 7631-86-9, Silica, processes
RL: GPR (Geological or astronomical process); PRP (Properties); PROC (Process)
(CaCl2-structured polymorph; mechanism of phase transformation of stishovite to the CaCl2-structured polymorph)
IT 13778-37-5, Stishovite
RL: GPR (Geological or astronomical process); PRP (Properties); PROC (Process)
(equation of state of stishovite to lower mantle pressures)
RE.CNT 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L10 ANSWER 7 OF 38 CAPLUS
AN 2002:595726 CAPLUS
DN 138:178408
ED Entered STN: 11 Aug 2002
TI Lattice dynamics of silicon crystal studied by picosecond time-resolved ***x*** -ray ***diffraction***
AU Hironaka, Yoichiro; Saito, Fumnikazu; Nakamura, Kazutaka; Kondo, Kenichi
CS Materials and Structures Laboratory, Tokyo Institute of Technology, 4259 Nagatsuta, Midori, Yokohama, 226-8503, Japan
SO JAERI-Conf (2001), 2001-011(Proceedings of the Second Symposium on Advanced Photon Research, 2000), 260-263
CODEN: JECNEC
PB Japan Atomic Energy Research Institute
DT Journal
LA Japanese
CC 75-5 (Crystallography and Liquid Crystals)
AB Picosecond time-resolved ***x*** -ray ***diffraction*** expt. is demonstrated to probe milli-angstrom deviation of lattice ***spacing*** for Si (111) plane under pulsed laser irradn. (300 ps pulse and 4 .times. 109 W/cm2) at an interval of 60 ps. The synchronized hard x-ray pulses (Fe K .alpha.1 and K .alpha.2) are generated by the femtosecond ***laser*** irradn. on to the Fe ***disk*** target. The obsd. rocking curves are analyzed by a computer code based on the dynamical diffraction theory, and it shows lattice compression and shock wave propagation perpendicular to the Si (111) plane. The obsd. max. compression is 1.05 %, which correspond to a pressure of 2.18 GPa.
ST lattice dynamics silicon crystal picosecond XRD
IT Shock wave
(laser-induced; shock wave propagation perpendicular to Si (111) plane obsd. by picosecond time-resolved ***x*** -ray ***diffraction***)
IT Lattice dynamics
(shock wave propagation perpendicular to the Si (111) planelattice dynamics of silicon crystal studied by picosecond time-resolved ***x*** -ray ***diffraction***)
IT X-ray diffractometry
(time-resolved, picosecond; lattice dynamics of silicon crystal studied by picosecond time-resolved ***x*** -ray ***diffraction***)
IT 7440-21-3, Silicon, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP

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      (Physical process); PROC (Process)
         (lattice dynamics of silicon crystal studied by picosecond
         time-resolved   ***x***  -ray   ***diffraction***  )

L10  ANSWER 8 OF 38  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2002:503917  CAPLUS
DN   137:54786
ED   Entered STN:  05 Jul 2002
TI   Optical switching elements, devices using them,   ***optical***
     recording   ***media***  , displays, and   ***optical***   recording
     apparatus
IN   Kobayashi, Hideo; Hikichi, Taketo
PA   Fuji Xerox Co., Ltd., Japan
SO   Jpn. Kokai Tokkyo Koho, 13 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM  G02F001-061
     ICS  C08K005-3415; C08L027-06; C08L029-14; C08L077-00; G02F001-13;
          G09F009-30
CC   74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other
     Reprographic Processes)
     Section cross-reference(s): 73
FAN.CNT 1
     PATENT NO.          KIND    DATE        APPLICATION NO.        DATE
     ---------------     ----    --------    --------------------   --------
PI   JP 2002189200        A2     20020705    JP 2000-387005         20001220
PRAI JP 2000-387005              20001220
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
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 JP 2002189200   ICM    G02F001-061
                 ICS    C08K005-3415; C08L027-06; C08L029-14; C08L077-00;
                        G02F001-13; G09F009-30
                 IPCI   G02F0001-061 [ICM,7]; C08K0005-3415 [ICS,7];
                        C08L0027-06 [ICS,7]; C08L0029-14 [ICS,7]; C08L0077-00
                        [ICS,7]; G02F0001-13 [ICS,7]; G09F0009-30 [ICS,7]
AB   The element, showing high photosensitivity, has a substrate, an electrode
     layer, a lower charge generation layer, an electron transport layer, and
     an upper charge generation layer in this order, wherein the lower and/or
     upper charge generation layers contain chlorogallium phthalocyanine having
       ***x***  -ray   ***diffraction***   peaks at Bragg angle (1) 7.4, 16.6,
     25.5, 28.3.degree., (2) 6.8, 17.3, 23.6, and 26.9.degree., or (3) 8.7-9.2,
     17.6, 24.0, 27.4, and 28.8.degree., hydroxygallium phthalocyanine having
     diffraction peaks at Bragg angle (1) 7.5, 9.9, 12.5, 16.3, 18.6, 25.1, and
     28.3.degree., (2) 7.7, 16.5, 25.1, and 26.6.degree., (3) 7.9, 16.5, 24.4,
     and 27.6.degree., (4) 7.0, 7.5, 10.5, 11.7, 12.7, 17.3, 18.1, 24.5, 26.2,
     and 27.1.degree., (5) 6.8, 12.8, 15.8, and 26.0.degree., or (6) 7.4, 9.9,
     25.0, 26.2, and 28.2.degree., and/or titanyl phthalocyanine having
     diffraction peaks at Bragg angle (1) 9.3 and 26.3.degree. or (2) 9.5, 9.7,
     11.7, 15, 23.5, 24.1, and 27.3.degree..  The element is esp. useful for an
     OPC   ***cell***   and a liq. crystal display.
ST   optical switching element high photosensitivity display; liq crystal
     display phthalocyanine charge generator; polyvinyl butyral phthalocyanine
       ***optical***   recording   ***medium***
IT   Polyamides, uses
     Polyvinyl butyrals
     RL: TEM (Technical or engineered material use); USES (Uses)
        (binder, charge generation layer; optical switching elements with high
        photosensitivity having phthalocyanine charge generation layers for
          ***optical***   recording   ***media***   and displays)
IT   Polyesters, uses
     RL: TEM (Technical or engineered material use); USES (Uses)
        (film, substrate; optical switching elements with high photosensitivity
        having phthalocyanine charge generation layers for   ***optical***
        recording   ***media***   and displays)
IT   Liquid crystal displays
     Optical memory devices
     Optical recording materials
     Optical switches
        (optical switching elements with high photosensitivity having
        phthalocyanine charge generation layers for   ***optical***   recording
```

media and displays)
IT Plastics, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate; optical switching elements with high photosensitivity having phthalocyanine charge generation layers for ***optical*** recording ***media*** and displays)
IT 9003-22-9D, Vinyl chloride-vinyl acetate copolymer, carboxyl-modified
RL: TEM (Technical or engineered material use); USES (Uses)
(binder, charge generation layer; optical switching elements with high photosensitivity having phthalocyanine charge generation layers for ***optical*** recording ***media*** and displays)
IT 574-93-6, Phthalocyanine 19717-79-4, Chlorogallium phthalocyanine 26201-32-1, Titanyl phthalocyanine 63371-84-6, Hydroxygallium phthalocyanine
RL: TEM (Technical or engineered material use); USES (Uses)
(charge generator; optical switching elements with high photosensitivity having phthalocyanine charge generation layers for ***optical*** recording ***media*** and displays)
IT 25038-59-9, Poly(ethylene terephthalate), uses
RL: TEM (Technical or engineered material use); USES (Uses)
(film, substrate; optical switching elements with high photosensitivity having phthalocyanine charge generation layers for ***optical*** recording ***media*** and displays)

L10 ANSWER 9 OF 38 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:789865 CAPLUS
DN 136:142494
ED Entered STN: 31 Oct 2001
TI Acceleration of crystallization speed by Sn addition to Ge-Sb-Te phase-change recording material
AU Kojima, Rie; Yamada, Noboru
CS Optical Disk Systems Development Center, Matsushita Electric Industrial Co., Ltd., Osaka, 570-8501, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (2001), 40(10), 5930-5937
CODEN: JAPNDE
PB Japan Society of Applied Physics
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB It is shown that a quaternary Ge-Sn-Sb-Te phase-change recording material obtained by adding Sn to Ge-Sb-Te has a higher crystn. speed than Ge-Sb-Te, and gives a larger erase ratio than Ge-Sb-Te when film thickness is decreased. Static evaluations have shown that a 6-nm-thick quaternary material was crystd. by laser irradn. of 50 ns. Measurements carried out under the conditions of a wavelength of 405 nm, a linear speed of 8.6 m/s and a mark ***length*** of 0.294 .mu.m showed that the erase ratio of over 30 dB was obtained with the new compn. for a 6-nm-thick layer. A carrier-to-noise ratio (CNR) exceeding 50 dB was also obtained. It was concluded that these effects of Sn addn. which give rise to complete crystn. are brought about by abundant nucleation in the amorphous phase even in thin layers. It was confirmed by ***X*** -ray ***diffraction*** analyses that the new Ge-Sn-Sb-Te material has a single-phase-NaCl-type structure, like the conventional compns. of Ge-Sb-Te.
ST antimony germanium tin telluride phase change ***optical*** recording ***disk*** ; crystn speed acceleration antimony germanium telluride recording material disk
IT Crystallization
Optical ***disks***
X-ray diffractometry
(acceleration of crystn. speed by tin addn. to Ge-Sb-Te phase-change recording material)
IT Telluride glasses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(acceleration of crystn. speed by tin addn. to Ge-Sb-Te phase-change recording material)
IT Optical recording materials
(phase-change; acceleration of crystn. speed by tin addn. to Ge-Sb-Te phase-change recording material)

IT 1314-98-3, Zinc sulfide, uses 7631-86-9, Silica, uses 51845-89-7, Germanium nitride
RL: DEV (Device component use); USES (Uses)
(acceleration of crystn. speed by tin addn. to Ge-Sb-Te phase-change recording material)
IT 7440-31-5, Tin, uses
RL: MOA (Modifier or additive use); USES (Uses)
(acceleration of crystn. speed by tin addn. to Ge-Sb-Te phase-change recording material)
IT 389866-63-1 389866-65-3
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(acceleration of crystn. speed by tin addn. to Ge-Sb-Te phase-change recording material)
IT 12040-02-7, Tin telluride
RL: PRP (Properties)
(acceleration of crystn. speed by tin addn. to Ge-Sb-Te phase-change recording material in relation to)
IT 117958-28-8, Antimony germanium telluride (Sb2Ge4Te7) 389866-64-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(recording layer; acceleration of crystn. speed by tin addn. to Ge-Sb-Te phase-change recording material)
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L10 ANSWER 10 OF 38 CAPLUS
AN 2000:476410 CAPLUS
DN 133:230289
ED Entered STN: 16 Jul 2000
TI Deposition and characterization of metastable Cu3N layers for applications in optical data storage

AU Cremer, Rainer; Witthaut, Mirjam; Neuschutz, Dieter; Trappe, Cyril; Laurenzis, Martin; Winkler, Olaf; Kurz, Heinrich
CS Lehrstuhl fur Theoretische Huttenkunde, Rheinisch-Westfalische Technische Hochschule Aachen, Aachen, D-52056, Germany

SO Mikrochimica Acta (2000), 133(1-4), 299-302
CODEN: MIACAQ; ISSN: 0026-3672
PB Springer-Verlag Wien
DT Journal
LA English

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73

AB Cu3N films for optical data storage were deposited on Si(100) wafers and 0.6 mm thick polycarbonate DVD base material disks at a temp. of 50.degree.C by reactive magnetron sputtering. A copper target was sputtered in rf mode in a nitrogen plasma. For basic investigations concerning the compn. and structure of Cu3N, Si wafers were used as substrate material. To study the suitability of Cu3N as an ***optical*** data storage ***medium*** under tech. conditions, Cu3N/Al bilayers were deposited on polycarbonate disks. The compn. and structure of the films were investigated by XPS (XPS) and ***x*** -ray ***diffraction*** (XRD). The decompn. of Cu3N into metallic copper and nitrogen was induced and characterized with a dynamic tester consisting of an optical microscope with an integrated high power laser diode. The change in reflectivity induced by the laser pulses was measured by a high sensitivity photo detector. Optimized Cu3N films could be decompd. into

metallic copper at pulse ***lengths*** of 200 ns. The reflectivity
change from 3.2% to 33.2% for completely transformed areas and to 12% for
single bits as well as the max. write data rate of 3.3 Mbit/s demonstrated
the suitability of Cu3N for write once optical data storage. Esp. the
carrier to noise ratio of 41 dB shows an increase of a factor of 3 for
this novel material as compared to conventional ***optical*** data
storage ***media*** .

ST copper nitride deposition compact disk; optical data storage magnetron
sputtering

IT ***Optical*** ROM ***disks***
Optical recording materials
Optical reflection
(deposition and characterization of metastable Cu3N layers for
applications in optical data storage)

IT Polycarbonates, uses
RL: DEV (Device component use); USES (Uses)
(deposition and characterization of metastable Cu3N layers for
applications in optical data storage)

IT Magnetron sputtering
(plasma; deposition and characterization of metastable Cu3N layers for
applications in optical data storage)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(deposition and characterization of metastable Cu3N layers for
applications in optical data storage)

IT 7429-90-5, Aluminum, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(deposition and characterization of metastable Cu3N layers for
applications in optical data storage)

IT 1308-80-1, Copper nitride
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PRP (Properties); PROC (Process); USES (Uses)
(deposition and characterization of metastable Cu3N layers for
applications in optical data storage)

IT 7440-50-8, Copper, formation (nonpreparative) 7727-37-9, Nitrogen,
formation (nonpreparative)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(deposition and characterization of metastable Cu3N layers for
applications in optical data storage)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L10 ANSWER 11 OF 38 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:191778 CAPLUS
DN 132:297190
ED Entered STN: 26 Mar 2000

TI Structural specifics of phosphate glasses probed by diffraction methods: a
review

AU Hoppe, U.; Walter, G.; Kranold, R.; Stachel, D.
CS Department of Physics, Rostock University, Rostock, D-18051, Germany

SO Journal of Non-Crystalline Solids (2000), 263&264, 29-47
CODEN: JNCSBJ; ISSN: 0022-3093
PB Elsevier Science B.V.
DT Journal; General Review
LA English
CC 57-0 (Ceramics)

AB A review, with 95 refs., of contributions to the structure of phosphate
glasses made by diffraction studies. The resoln. in real space of the
neutron diffraction expts. resolves two P-O distances. The
lengths of the P-O bonds to the terminal and to the bridging
oxygen atoms change as a function of the P2O5 content and of the species
of the modifier cation. The model about the role of the properties of the

modifier atoms, Me, in the structure of phosphate glasses predicts three different types of structural incorporation of these atoms. The exptl. findings of a network change at .apprxeq.20 mol% modifier oxide content in range I are explained by a change of the interaction between the Me sites and the twofold-linked PO4 groups. For the intermediate cations a change of the Me-O coordination no., NMeO, is obtained which indicates a stabilization of Me-O-P bridges in range II. With increasing modifier content a situation commonly described as a modified random network ensues (range III) where clusters of MeOn polyhedra are formed. The corresponding consequences for the Me-Me distances from the relation between NMeO and the available no. of terminal oxygen atoms per modifier cation are simulated by the reverse Monte Carlo method. This approach which makes use of the scattering ***information*** about the ***medium*** -range order is applied to the structures of binary metaphosphate glasses with Me = Zn, Ca, Sr, Ba, Na and K.

ST review phosphate glass structure ***x*** ray ***diffraction***

IT Glass structure
(phosphate glass; structure of phosphate glasses probed by ***x*** -ray ***diffraction*** methods)

IT Phosphate glasses
RL: PRP (Properties)
(structure of phosphate glasses probed by ***x*** -ray ***diffraction*** methods)

IT 1314-56-3, Phosphorus oxide (P2O5), properties
RL: PRP (Properties)
(glass, phosphate; structure of phosphate glasses probed by ***x*** -ray ***diffraction*** methods)

RE.CNT 95 THERE ARE 95 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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L10 ANSWER 12 OF 38 CAPLUS
AN 1998:357027 CAPLUS
ED Entered STN: 12 Jun 1998
TI Temperature and pressure distribution in the laser-heated diamond-anvil ***cell***
AU Dewaele, Agnes; Fiquet, Guillaume; Gillet, Philippe
CS Laboratoire des Sciences de la Terre (UMR 5570, CNRS), Ecole Normale Superieure de Lyon, Lyon, 69364, Fr.
SO Review of Scientific Instruments (1998), 69(6), 2421-2426
CODEN: RSINAK; ISSN: 0034-6748
PB American Institute of Physics
DT Journal
LA English
AB Thermomech. modeling of a sample assembly (sample plus pressure transmitting ***medium***) in a ***laser*** -heated diamond-anvil ***cell*** (LHDAC) is presented. Finite elements numerical calcn. afforded to obtain the temp. distribution and the induced thermal pressure field, showing that a non-negligible pressure increase (called thermal

pressure) occurs in the laser-heated zone. When argon is used as a pressure transmitting medium, thermal pressure can reach 20%-30% of the normal pressure measured in the cold zone. This modeling is supported by exptl. studies. It is shown that discrepancies between diamond-anvil ***cell*** and large vol. press expts. on the coesite to stishovite transition are quant. explained by the thermal pressure effect. Moreover, thermal pressure also explains the anomalous low thermal expansion coeff. obtained by ***x*** -ray ***diffraction*** studies in LHDAC.

RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L10 ANSWER 13 OF 38 CAPLUS

AN 1996:157360 CAPLUS
DN 124:245729
ED Entered STN: 19 Mar 1996

TI Potential ***laser*** gain ***media*** with the stoichiometric formula RETiNbO6

AU Qi, X.; Illingworth, R.; Gallagher, H. G.; Han, T. P. J.; Henderson, B.
CS Department of Physics and Applied Physics, University of Strathclyde, Glasgow G1 1XN, Scotland, UK

SO Journal of Crystal Growth (1996), 160(1/2), 111-18
CODEN: JCRGAE; ISSN: 0022-0248
PB Elsevier
DT Journal
LA English

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB The laser heated pedestal growth (LHPG) technique was used to grow miniature crystals of the mixed niobates, RETiNbO6 with RE = Nd, Pr and Er, having typical dimensions of 0.5 mm diam. and 10 mm in ***length*** . The Nd and Pr compds. grow in the aeschynite structure, whereas the Er compd. grows with the euxenite structure, The crystals grown by the LHPG technique were characterized by measurement of their ***x*** -ray ***diffraction*** patterns and optical absorption and photoluminescence spectra. The latter show very high absorption coeffs. for the rare earth ions and strong luminescence signals. Brief reports are presented of these spectra, and discussed in terms of the potential of RETiNbO6 single crystals as ***laser*** gain ***media*** .

ST ***laser*** gain ***media*** rare earth niobate

IT ***Lasers***

Luminescence

Optical absorption

(potential ***laser*** gain ***media*** with stoichiometric

formula RETiNbO6)
IT 11092-21-0, Praseodymium titanium niobate PrTiNbO6 12401-87-5, Neodymium titanium niobate NdTiNbO6 59778-54-0, Erbium niobium titanium oxide (ErNbTiO6)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(potential ***laser*** gain ***media*** with stoichiometric formula RETiNbO6)

L10 ANSWER 14 OF 38 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:556705 CAPLUS
DN 123:127415
ED Entered STN: 17 May 1995
TI Pretilt angle measurements on smectic A ***cells*** with chevron and tilted bookshelf layer structures
AU Bonvent, J. J.; Van Haaren, J. A. M. M.; Cnossen, G.; Verhulst, A. G. H.; Van der Sluis, P.
CS Philips Res. Lab., Eindhoven, 5656 AA, Neth.
SO Liquid Crystals (1995), 18(5), 723-31
CODEN: LICRE6; ISSN: 0267-8292
PB Taylor & Francis
DT Journal
LA English
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 75
AB We have measured the pretilt angle induced by rubbed polymer films in a smectic A and in a nematic liq. cryst. ***medium*** using an ***optical*** phase retardation method. The pretilt angle was found to depend on the liq. cryst. phase (smectic A vs. nematic) and on the smectic layer structure (chevron vs. tilted-bookshelf). The occurrence of the different smectic layer structures was verified by ***x*** -ray ***diffraction*** measurements. The effect of the applied rubbing energy on the pretilt angle obtained is measured.
ST pretilt angle smectic A liq crystal; chevron tilted bookshelf layer liq crystal
IT Liquid crystals
(pretilt angle measurements on smectic A ***cells*** with chevron and tilted bookshelf layer structures)
IT Optical imaging devices
(electrooptical liq.-crystal, pretilt angle measurements on smectic A ***cells*** with chevron and tilted bookshelf layer structures)
IT Optical modulation
(phase, pretilt angle measurements on smectic A ***cells*** with chevron and tilted bookshelf layer structures)
IT 40817-08-1, 5CB 107874-36-2, S 5 (liquid crystal)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(pretilt angle measurements on smectic A ***cells*** with chevron and tilted bookshelf layer structures)

L10 ANSWER 15 OF 38 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:224035 CAPLUS
ED Entered STN: 04 Dec 1994
TI The relationship between the microstructure and magnetic properties of sputtered Co/Pt multilayer films (abstract)
AU Kim, Y. H.; Petford-Long, Amanda K.; Jakubovics, J. P.
CS Dep. Mater., Univ. Oxford, Oxford, OX1 3PH, UK
SO Journal of Applied Physics (1994), 76(10, Pt. 2), 6099
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
AB Co/Pd multilayer films (MLFs) are of interest because of their potential application as high-d. magneto- ***optical*** recording ***media*** . Co/Pd MLFs with varying Co and Pd layer thicknesses were grown by sputter-deposition onto (100) Si wafers. ***X*** -ray ***diffraction*** and high resoln. electron microscopy were used to study the microstructure of the films, and Lorentz microscopy was used to analyze their magnetic domain structure. The films show an fcc crystal structure with a compromised lattice parameter and a strong (111) crystallog. texture in the growth direction. The compromised interplanar ***spacing*** parallel to the surface increased with decreasing thickness ratio (tCo/tPd), and the columnar grain size decreased with

increasing Pd layer thickness. Films with tCo = 0.35 nm and tPd = 2.8 nm (columnar grain diam. 20 nm) showed promising magnetic properties, namely a high perpendicular magnetic anisotropy (1.85.times.105 J m-3), with a perpendicular coercivity of 98.7 kA m-1, a perpendicular remanence ratio of 99%, and a perpendicular coercivity ratio of 88%. The magnetic domains were uniform and of a narrow stripe type, confirming the perpendicular easy axis of magnetization. The Curie temp. was found to be about 430 .degree.C. Films of pure Co and Pd, grown for comparison, also showed columnar grain structure with grain-sizes of the same order as those seen in the MLFs. In addn. the Pd films showed a (111) textured fcc structure.

L10 ANSWER 16 OF 38 CAPLUS

AN 1992:201830 CAPLUS
DN 116:201830
ED Entered STN: 16 May 1992
TI Interface atomic structure determination of an aluminum(001)/gallium arsenide(001) bicrystal using higher-order Laue zone analysis and atom location by channelling-enhanced microanalysis
AU Al-Khafaji, M. A.; Cherns, D.; Rossouw, C. J.; Woolf, D. A.
CS H. H. Wills Phys. Lab., Bristol Univ., Bristol, BS8 1TL, UK
SO Philosophical Magazine B: Physics of Condensed Matter: Statistical Mechanics, Electronic, Optical and Magnetic Properties (1992), 65(3), 385-99
CODEN: PMABDJ; ISSN: 0958-6644
DT Journal
LA English
CC 66-5 (Surface Chemistry and Colloids)
Section cross-reference(s): 75

AB The interface at. structure of a Al(001)/GaAs(001) bicrystal with a high d. of misfit dislocations is derived by two dynamical diffraction techniques. First, anal. of contrast in higher-order Laue zone (HOLZ) ***disks*** yields ***information*** on excitation amplitudes of successive. Bloch wave states assocd. with the fast electron wavefunction in the underlying GaAs layer, and how these vary with rigid shift and position between misfit dislocations. Second, characteristic x-ray emission is recorded in energy-dispersive ***x*** -ray spectra under varying 220 systematic row ***diffraction*** conditions, and changes in emission rates from Al, Ga and As are monitored as a function of orientation (similar to an atom location by channeling-enhanced microanal. (ALCHEMI)). The authors base our anal. on changes in Bloch wave branch amplitudes induced in GaAS with a rigid shift of the top Al layer; together with addnl. displacements due to a periodic array of interfacial 1/4 <110> dislocations. The influence of the interfacial dislocation network on both HOLZ and the ALCHEMI results is found to be small for the obsd. dislocation ***spacing*** of 170 .ANG.. Misfit dislocations may provide a strong perturbation and render theory based on an undislocated interface invalid for ***spacings*** less than 50 .ANG.. Both the HOLZ and the ALCHEMI results support the rigid-shift model which projects Al atoms onto open channels in the GaAs<001> structure, in agreement with previous observations.

ST aluminum gallium arsenide interface structure
IT Interfacial structure
(between aluminum and gallium arsenide, detd. by higher order Laue zone anal. and channelling enhanced microanal.)
IT 1303-00-0, Gallium arsenide, properties
RL: PRP (Properties)
(interface of, with aluminum, structure of)
IT 7429-90-5, Aluminum, properties
RL: PRP (Properties)
(interface of, with gallium arsenide, structure of)

L10 ANSWER 17 OF 38 CAPLUS

AN 1983:490796 CAPLUS
DN 99:90796
ED Entered STN: 12 May 1984
TI Structural study of cokes using optical microscopy and ***x*** -ray ***diffraction***
AU Oya, Asao; Qian, Zhanfen; Marsh, Harry
CS Sch. Chem., Univ. New Castle upon Tyne, UK
SO Ranliao Huaxue Xuebao (1983), 11(2), 9-17
CODEN: RHXUD8; ISSN: 0253-2409
DT Journal

LA   Chinese
CC   51-19 (Fossil Fuels, Derivatives, and Related Products)
AB   Twenty four cokes covering ranges of optical texture from isotropic to domains (>60 .mu. diam.) were examd. by ***x*** -ray ***diffraction*** . The variation of optical texture index (OTI) with crystallite height and interlayer ***spacing*** was studied. The OTI varies little with the x-ray parameters for cokes whose ***optical*** texture is larger than ***medium*** -grained mosaics (195-5.0 .mu.). For cokes of smaller optical texture, a shape decrease in crystallite height and an increase in interlayer ***spacing*** occur. These results are discussed in terms of the fluid mesophase and crystallog. order.
ST   coke microscopy ***x*** ray ***diffraction*** ; optical microscopy coke structure; ***x*** ray ***diffraction*** coke structure
IT   X-ray
       (in coke structure detn.)
IT   Microscopy
       (of cokes, structure in relation to)
IT   Coke
     RL: PRP (Properties)
       (structure of, optical microscopy and ***x*** -ray ***diffraction*** in study of)

L10 ANSWER 18 OF 38 CAPLUS COPYRIGHT 2006 ACS on STN
AN   1983:163636 CAPLUS
DN   98:163636
ED   Entered STN: 12 May 1984
TI   Structural study of cokes using optical microscopy and ***x*** -ray ***diffraction***
AU   Oya, Asao; Qian, Zhanfen; Marsh, Harry
CS   Sch. Chem., Univ. Newcastle upon Tyne, Newcastle upon Tyne, NE1 7RU, UK
SO   Fuel (1983), 62(3), 274-8
     CODEN: FUELAC; ISSN: 0016-2361
DT   Journal
LA   English
CC   51-19 (Fossil Fuels, Derivatives, and Related Products)
AB   Cokes exhibiting a range of optical textures from isotropic to anisotropic domains >60 .mu.m diam. were examd. by ***x*** -ray ***diffraction*** . The variation of an optical texture index (OTI) with crystallite height and interlayer ***spacing*** was studied. The OTI varies little with the x-ray parameters for cokes with an ***optical*** texture larger than ***medium*** -grained (1.5-5.0 .mu.m) mosaic anisotropy. For cokes of smaller optical texture there is a sharp decrease in crystallite height and an increase in interlayer ***spacing*** . Results are discussed in terms of a fluid mesophase that removes defects in cokes with optical texture of size of coarse-grained mosaics and larger. Cokes with smaller optical texture are formed from a less fluid mesophase which does not coalesce. Defects therefore remain in the anisotropic carbon of the coke, thus reducing crystallog. order.
ST   coke isotropy anisotropy fluid mesophase; ***x*** ray ***diffraction*** coke structure
IT   Coke
     RL: USES (Uses)
       (anisotropy-isotropy of, fluid mesophase defect removal in relation to)
IT   Isotropic substances
       (cokes, fluid mesophase defect removal in relation to)
IT   Molecular structure
       (of cokes, fluid mesophase defect removal in)
IT   Microstructure
       (of cokes, fluid mesophase defect removal in relation to)
IT   Liquid crystals
       (mesophase, of cokes, removal of defects by, anisotropy in relation to)

L10 ANSWER 19 OF 38 CAPLUS COPYRIGHT 2006 ACS on STN
AN   1963:445418 CAPLUS
DN   59:45418
OREF 59:8197g-h,8198a-b
ED   Entered STN: 22 Apr 2001
TI   Technique of growth and processing of large Pb and Zn single crystals for monochromatization of neutron beams
AU   Cioca, V.
CS   Atomic Phys. Inst., Bucharest, Rom.

SO Acad. Rep. Populare Romine, Studii Cercetari Fiz. (1963), 14(3), 317-27
DT Journal
LA Unavailable
CC 8 (Crystallization and Crystal Structure)
AB Large Pb and Zn single crystals were obtained by growth from the melt, in accordance with the Bridgman and Chalmers methods. Tech. pure Pb and Zn (max. 0.02% impurities) were used. The metals were melted in sep. crucibles and purified by bubbling with different fluxes, and were transferred in the molten state to the crucible within the growth-from-the-melt furnace, being covered with a flux layer. The crystn. process was started after 90 min. in which the entire mass of metal was in thermal equil. with the furnace. After complete solidification and cooling, the crystd. block was either removed for characterization or further refined by zone melting in the same crucible. The block was suspended on a steel wire, and at the end of each of 4-5 passages along a single heated zone in the furnace, at a rate of 50 mm./hr., the purified material had collected in the crucible, while the solid top enriched in impurities could be simply removed by means of the steel wire. After zone refining, the material was remelted and the growth-from-the-melt process repeated, to yield single crystals of 85 mm. diam. and 250 mm. ***length*** . The crystals were first polished chem., with HCl for Zn and H2O2 + MeOH 2:1 for Pb, and subsequently analyzed by reflected light, ***x*** -ray and neutron ***diffraction*** . Single-crystal disks of various thicknesses were obtained by cutting with elec. sparks (Cole, el al., Brit. Jour. Appl. Phys. 12, 296(1961)); the equipment is described in detail. Exptl. studies of Pb ***disks*** (1̄11) gave an ***optical*** thickness of 8-12 mm. for .lambda. = 1.2 A., with an active crystallographic surface of up to 120 cm.2 and mosaic structure up to 30' arc. The cryst. lattice had not deformed in vol. in the course of the processing and the luminosity with respect to neutrons was good. 17 references.
IT Crystals
(growth of, from melt, macroheterogeneities in)
IT Crystals
(growth of, of Pb and Zn for neutron monochromators)
IT Monochromators
(neutron, Pb and Zn single crystals for)
IT 7440-66-6, Zinc
(crystals of, for neutron monochromators)
IT 7439-92-1, Lead
(crystals of, growth of, for neutron monochromator)
IT 12586-31-1, Neutrons
(monochromators for, Pb and Zn single crystals for)

L10 ANSWER 20 OF 38 INSPEC (C) 2006 IEE on STN
AN 2005:8604692 INSPEC DN A2005-23-6140K-006
TI Sructure and properties of poly(vinyl alcohol) hydrogels obtained by freeze/thaw techniques.
AU Ricciardi, R.; Auriemma, F.; De Rosa, C. (Dipt. di Chimica, Naples Univ., Italy)
SO Polymer-Solvent Complexes and Intercalates V (Macromolecular Symposia Vol.222)
Editor(s): Grohens, Y.
Weinheim, Germany: Wiley-VCH, 2005. p.49-63 of 296 pp. 31 refs.
Conference: Lorient, France, 11-13 July 2004
DT Conference Article
TC Experimental
CY Germany, Federal Republic of
LA English
AB The relationships between the structure and the viscoelastic properties of freeze/thaw PVA hydrogels obtained by repeatedly freezing and thawing dilute solutions of PVA in D2O(11 % w/w PVA) in as-prepared and rehydrated states are investigated. Our results indicate that the PVA chains and solvent molecules are organized at different hierarchical ***length*** scales, which include the presence of micro-and macro-pores, into a network scaffolding. The porous network is ensured by the presence of crystallites, which act as knots interconnected by portions of PVA chains swollen by the solvent. ***X*** -ray ***diffraction*** and SANS techniques are used to obtain structural ***information*** at short (angstroms) and ***medium*** (nanometers) ranges of ***length*** scales, concerning the crystallinity, the size of small crystalline aggregates and the average distance between

crystallites in PVA hydrogels. Indirect information concerning the structural organization on the large ***length*** scales (microns) are provided by viscoelastic measurements. The dynamic shear elastic moduli at low frequency and low strain amplitude, G', are determined and related to the degree of crystallinity. These data indicate that a minimum crystallinity of 1% is required for these PVA samples to exhibit gel behaviour and have allowed obtaining the order of magnitude of the average mesh size in these gels. Finally, it is shown that the negative effect of aging, inducing worse physical and mechanical properties in these systems, may be prevented using a drying/re-hydration protocol able to keep the physical properties of the as-prepared PVA hydrogels.

CC A6140K Structure of polymers, elastomers, and plastics; A6470D Solid-liquid transitions

CT AGEING; CRYSTALLITES; DRYING; FREEZING; MELTING; MOLECULAR CONFIGURATIONS; NEUTRON DIFFRACTION; POLYMER GELS; POLYMER STRUCTURE; POROSITY; POROUS MATERIALS; SHEAR MODULUS; SOLVATION; VISCOELASTICITY; ***X*** -RAY ***DIFFRACTION***

ST poly(vinyl alcohol) hydrogels; freeze/thaw techniques; viscoelastic properties; dilute solutions; rehydrated states; PVA chains; solvent molecules; micropores; macropores; porous network; crystallites; ***X-ray diffraction*** ; SANS; crystallinity; crystalline aggregates; structural organization; dynamic shear elastic moduli; mesh size; aging; drying/re-hydration protocol

ET D*O; D2O; D cp; cp; O cp

L10 ANSWER 21 OF 38 INSPEC (C) 2006 IEE on STN

AN 2004:8098931 INSPEC DN A2004-21-4255V-001; B2004-10-4320-006

TI Investigation of a highly saturated soft X-ray amplification in a capillary discharge plasma waveguide.

AU Ritucci, A.; Tomassetti, G.; Reale, A.; Palladino, L.; Reale, L. (Dept. of Phys., Univ. of L'Aquila, Italy); Flora, F.; Mezi, L.; Kukhlevsky, S.V.; Faenov, A.; Pikuz, T.

SO Applied Physics B (Lasers and Optics) (May-June 2004) vol.B78, no.7-8, p.965-9. 9 refs.
Published by: Springer-Verlag
CODEN: APBOEM ISSN: 0946-2171
SICI: 0946-2171(200405/06)B78:7/8L.965:IHSS;1-3

DT Journal

TC Practical; Theoretical; Experimental

CY Germany, Federal Republic of

LA English

AB The characterization of the laser beam intensity distribution of a highly saturated 46.9 nm soft X-ray laser excited by capillary discharges is reported. The laser produces a total output energy of 300 mu J/pulse by amplification in plasma channels having ***lengths*** up to 0.45 m. A regime of laser amplification, which is almost free from the effect of the refraction defocusing, is experimentally determined. This regime produces a soft X-ray laser beam with an intense submilliradiant component. In the longer active ***medium*** the ***laser*** intensity distribution reaches the divergence of 0.6 mrad, which approaches the limit of diffraction. A comparison of the experimental results with the simulations performed with a ray-tracing code shows that the small divergence of the beam could be attributed to the effect of a weak index waveguiding of the laser beam through the long plasma channels.

CC A4255V High energy lasing processes (e.g. gamma and X-ray lasers); A4260H Laser beam characteristics and interactions; A5240F Antennas in plasma; plasma-filled wave guides; A4225G Edge and boundary effects; optical reflection and refraction; A4225F Optical diffraction and scattering; A5240D Electromagnetic wave propagation in plasma; B4320 Lasers; B4330 Laser beam interactions and properties; B1310 Waveguides and striplines; B5210H Electromagnetic wave propagation in plasma

CT AMPLIFICATION; LASER BEAMS; LIGHT REFRACTION; PLASMA FILLED WAVEGUIDES; PLASMA LIGHT PROPAGATION; RAY TRACING; SUBMILLIMETRE WAVES; ***X*** -RAY ***DIFFRACTION*** ; X-RAY LASERS

ST soft X-ray amplification; capillary discharge; plasma waveguide; laser beam intensity distribution; laser amplification; refraction defocusing; submilliradiant component; light divergence; light diffraction; ray-tracing code; plasma channels; 46.9 nm; 0.6 Mrad; 300 muJ; 0.45 m

PHP wavelength 4.69E-08 m; radiation absorbed dose 6.0E+03 Gy; energy 3.0E-04 J; size 4.5E-01 m

L10 ANSWER 22 OF 38 INSPEC (C) 2006 IEE on STN

AN 2004:7840546 INSPEC DN A2004-05-8760F-001; B2004-03-4360H-001
TI Surface modifications induced by ns and sub-ps excimer laser pulses on titanium implant material.
AU Bereznai, M. (Dept. of Opt. & Quantum Electron., Szeged Univ., Hungary); Pelsoczi, I.; Toth, Z.; Turzo, K.; Radnai, M.; Bor, Z.; Fazekas, A.
SO Biomaterials (2003) vol.24, no.23, p.4197-203. 44 refs.
Published by: Elsevier
Price: CCCC 0142-9612/03/$30.00
CODEN: BIMADU ISSN: 0142-9612
SICI: 0142-9612(2003)24:23L.4197:SMIE;1-Z
DT Journal
TC Experimental
CY United Kingdom
LA English
AB Medical implants used in oral and orthopaedic surgery are mainly produced from titanium. Their biological behaviour, e.g. osseointegration, essentially depends on both the chemical composition and the morphology of the surface. Modifications achieved by excimer laser irradiation of titanium samples were investigated in order to improve their surface characteristics so as to facilitate biointegration. To enlarge the effective interfacial area of bone-implant contact, holes were ablated by laser pulses of ns or sub-ps ***length*** . During ns ablation, crown-like projecting rims formed around the borders of the holes. Ultra-short (0.5 ps) KrF excimer laser pulses were successfully applied to avoid these undesirable formations. Since a smooth dental implant surface is necessary to maintain a healthy connection with the soft tissues, laser polishing of samples was investigated, too. Irradiation with a series of ns laser pulses resulted in effective smoothing, as measured with atomic force microscope. X-ray photoelectron spectroscopy analysis of the laser-polished titanium surface revealed that laser treatment led to a decrease of the surface contamination and in thickening of the oxide layer. ***X*** -ray ***diffraction*** measurements demonstrated that the original alpha -titanium crystal structure was preserved.
CC A8760F Optical and laser radiation (medical uses); A8770J Prosthetics and other practical applications; A6820 Solid surface structure; B4360H Biological and medical applications of lasers; B7520E Prosthetics and orthotics
CT ATOMIC FORCE MICROSCOPY; BIOMEDICAL MATERIALS; BONE; DENTISTRY; ***LASER*** APPLICATIONS IN ***MEDICINE*** ; ORTHOPAEDICS; SURFACE MORPHOLOGY; SURFACE ROUGHNESS; TITANIUM; ***X*** -RAY ***DIFFRACTION*** ; X-RAY PHOTOELECTRON SPECTRA
ST surface modifications; ns excimer laser pulse; sub-ps excimer laser pulse; titanium implant material; osseointegration; chemical composition; surface morphology; ultra-short KrF excimer laser pulses; bone-implant contact; laser ablation; laser polishing; atomic force microscope; X-ray photoelectron spectroscopy; surface contamination; oxide layer; ***X-ray*** *** diffraction measurements*** ; alpha -titanium crystal structure; surface roughness; 0.5 ps; Ti; KrF
CHI Ti el; KrF bin, Kr bin, F bin
PHP time 5.0E-13 s
ET F*Kr; KrF; Kr cp; cp; F cp; Ti; Kr

L10 ANSWER 23 OF 38 INSPEC (C) 2006 IEE on STN
AN 2004:7837158 INSPEC DN A2004-04-4282-059; B2004-02-4140-128
TI Focusing grating coupler for blue laser light.
AU Yeungjoon Sohn; Yongwoo Park; Dongwoo Suh; Ryu, H.; Mun Cheol Paek (Electron. & Telecommun. Res. Inst., Daejeon, South Korea)
SO IEEE Photonics Technology Letters (Jan. 2004) vol.16, no.1, p.162-4. 14 refs.
Published by: IEEE
Price: CCCC 1041-1135/04/$20.00
CODEN: IPTLEL ISSN: 1041-1135
SICI: 1041-1135(200401)16:1L.162:FGCB;1-Z
DT Journal
TC Experimental
CY United States
LA English
AB A focusing grating coupler (FGC) for use with a blue laser of 400-nm wavelength as a light source was fabricated for the first time. The FGC was designed to have a numerical aperture of 0.48 and a minimum period of 0.2 mu m when the focal ***length*** and the grating area were 900 mu m and 1*1 mm2, respectively. Grating pattern of minimum line of 0.1 mu m

was fabricated on a waveguide based on the boron phosphor-silicate glass material by electron-beam lithography process using the vector scan method. The spot size at the full width (1/e2) was measured as 0.92 and 0.85 mu m in ***x*** and y directions and was nearly the same as the ***diffraction*** limit.

CC A4282 Integrated optics; A4280L Optical waveguides and couplers; A4280F Gratings, echelles; A4285D Optical fabrication, surface grinding; A4280T Optical storage and retrieval; B4140 Integrated optics; B4130 Optical waveguides; B4120 Optical storage and retrieval

CT BOROSILICATE GLASSES; DIFFRACTION GRATINGS; ELECTRON BEAM LITHOGRAPHY; OPTICAL COUPLERS; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL FABRICATION; OPTICAL FOCUSING; OPTICAL GLASS; OPTICAL PLANAR WAVEGUIDES; PHOSPHOSILICATE GLASSES

ST focusing grating coupler; blue laser light; grating pattern; electron-beam lithography; vector scan method; optical beam focusing; optical device fabrication; optical memories; optical planar waveguide couplers; integrated pickup head; fine grating patterns; diffraction limit; BPSG waveguide layers; BPSG; B2O3-P2O5-SiO2

CHI B2O3P2O5SiO2 sur, B2O3 sur, P2O5 sur, SiO2 sur, B2 sur, O2 sur, O3 sur, O5 sur, P2 sur, Si sur, B sur, O sur, P sur, B2O3P2O5SiO2 ss, B2O3 ss, P2O5 ss, SiO2 ss, B2 ss, O2 ss, O3 ss, O5 ss, P2 ss, Si ss, B ss, O ss, P ss

ET B*O; B2O; B cp; cp; O cp; O*P; P2O; P cp; O*Si; SiO; Si cp; B*O*P*Si; B2O3P2O5SiO; B; O; P; Si

L10 ANSWER 24 OF 38 INSPEC (C) 2006 IEE on STN

AN 2002:7379684 INSPEC DN A2002-20-6160-052

TI Lattice dynamics of silicon crystal studied by picosecond time-resolved ***X*** -ray ***diffraction*** .

AU Hironaka, Y.; Saito, F.; Nakamura, K.; Kondo, K. (Mater. & Structures Lab., Tokyo Inst. of Technol., Yokohama, Japan)

SO Proceedings of the Second Symposium on Advanced Photon Research (JAERI-Con 2001-011)
Kyoto, Japan: JAERI, 2001. p.260-3 of xviii+334 pp. 5 refs.
Conference: Kyoto, Japan, 9-10 Nov 2000

DT Conference Article

TC Experimental

CY Japan

LA Japanese

AB A picosecond time-resolved ***X*** -ray ***diffraction*** experiment is demonstrated to probe the milli-angstrom deviation of lattice ***spacing*** for a Si(111) plane under pulsed laser irradiation (300ps pulse and 4*109W/cm2) at an interval of 60ps. The synchronized hard X-ray pulses (Fe K alpha 1 and K alpha 2) are generated by the femtosecond ***laser*** irradiation on to the Fe ***disk*** target. The observed rocking curves are analyzed by a computer code based on dynamical diffraction theory, and it shows lattice compression and shock wave propagation perpendicular to the Si(111) plane. The observed maximum compression is estimated to be 1.05%, which corresponds to a pressure of 2.18GPa.

CC A6160 Crystal structure of specific inorganic compounds; A6250 High-pressure and shock-wave effects in solids and liquids

CT ELEMENTAL SEMICONDUCTORS; LATTICE CONSTANTS; LATTICE DYNAMICS; SHOCK WAVES; SILICON; ***X*** -RAY ***DIFFRACTION***

ST ***picosecond time-resolved X-ray diffraction*** ; lattice dynamics; Si crystal; ***lattice spacing*** ; hard X-ray pulses; rocking curves; dynamical diffraction theory; lattice compression; shock wave; Si(111); 300 ps; 2.18 GPa; Si

CHI Si el

PHP time 3.0E-10 s; pressure 2.18E+09 Pa

ET Si; W; 9W; is; W is; Fe*K; Fe sy 2; sy 2; K sy 2; Fe K; Fe cp; cp; K cp; K; Fe

L10 ANSWER 25 OF 38 INSPEC (C) 2006 IEE on STN

AN 2002:7291679 INSPEC DN A2002-14-4270-004; B2002-07-4110-020

TI Acceleration of crystallization speed by Sn addition to Ge-Sb-Te phase-change recording material.

AU Kojima, R.; Yamada, N. (Opt. Disk Syst. Dev. Center, Matsushita Electr. Ind. Co. Ltd., Osaka, Japan)

SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (Oct. 2001) vol.40, no.10, p.5930-7. 13 refs.
Published by: Japan Soc. Appl. Phys
CODEN: JAPNDE ISSN: 0021-4922

SICI: 0021-4922(200110)40:10L.5930:ACSA;1-V
DT Journal
TC Application; Experimental
CY Japan
LA English
AB We have demonstrated that a quaternary Ge-Sn-Sb-Te phase-change recording material obtained by adding Sn to Ge-Sb-Te has a higher crystallization speed than Ge-Sb-Te, and gives a larger erase ratio than Ge-Sb-Te when film thickness is decreased. Static evaluations have shown that a 6-nm-thick quaternary material was crystallized by laser irradiation of 50 ns. Measurements carried out under the conditions of a wavelength of 405 nm, a linear speed of 8.6 m/s and a mark ***length*** of 0.294 mu m showed that the erase ratio of over 30 dB was obtained with the new composition for a 6-nm-thick layer. A carrier-to-noise ratio (CNR) exceeding 50 dB was also obtained. We think that these effects of Sn addition which give rise to complete crystallization are brought about by abundant nucleation in the amorphous phase even in thin layers. It was confirmed by ***X*** -ray ***diffraction*** analyses that the new Ge-Sn-Sb-Te material has a single-phase-NaCl-type structure, like the conventional compositions of Ge-Sb-Te.
CC A4270Y Other optical materials; A4280T Optical storage and retrieval; A6180B Ultraviolet, visible and infrared radiation effects; A6140 Structure of amorphous and polymeric materials; B4110 Optical materials; B4120 Optical storage and retrieval
CT AMORPHOUS STATE; CRYSTALLISATION; GERMANIUM COMPOUNDS; LASER BEAM EFFECTS; NUCLEATION; ***OPTICAL*** ***DISC*** STORAGE; OPTICAL MATERIALS; TIN COMPOUNDS; ***X*** -RAY ***DIFFRACTION***
ST crystallization speed; Sn addition; Ge-Sb-Te phase-change recording material; erase ratio; film thickness; laser irradiation; carrier-to-noise ratio; nucleation; amorphous phase; ***X-ray diffraction*** ; single-phase-NaCl-type structure; 6 nm; 50 ns; 405 nm; Ge-Sb-Te-Sn
CHI GeSbTeSn ss, Ge ss, Sb ss, Sn ss, Te ss
PHP size 6.0E-09 m; time 5.0E-08 s; wavelength 4.05E-07 m
ET Sn; Ge*Sb*Te; Ge sy 3; sy 3; Sb sy 3; Te sy 3; Ge-Sb-Te; Ge*Sb*Sn*Te; Ge sy 4; sy 4; Sb sy 4; Sn sy 4; Te sy 4; Ge-Sn-Sb-Te; B; Cl*Na; NaCl; Na cp; cp; Cl cp; Ge-Sb-Te-Sn; GeSbTeSn; Ge cp; Sb cp; Te cp; Sn cp; Ge; Sb; Te

L10 ANSWER 26 OF 38 INSPEC (C) 2006 IEE on STN
AN 2000:6667675 INSPEC DN A2000-18-0130C-018; B2000-09-0100-057
TI Northern Optics 2000. Joint Meeting of the Optical Societies of the Nordic Countries.
SO DOPS-NYT (2000) vol.15, no.2
Published by: Dansk Opt. Selskab
CODEN: DONYE2 ISSN: 0901-4632
Conference: Northern Optics 2000. Joint Meeting of the Optical Societies of the Nordic Countries. Uppsala, Sweden, 6-8 June 2000
DT Conference Proceedings; Journal
CY Denmark
LA Danish
AB The following topics were dealt with: optical communications; photonic crystal fibers; semiconductor light emitters and solar ***cells*** ; laser diodes with diffractive optics; ultrafast all-solid-state lasers; photon-atom entanglement and quantum memory; time-resolved microphotoluminescence; photovoltaic devices; atom and molecule reflection; light in moving media; Bragg gratings wavelength routers; bidirectional WDM multifiber ring network; complex photonic microsystems; compact external-cavity diode laser; optical quantum cryptography; delayed interference and nonlinear optics; green, blue and UV light generation; high aperture monochromator with concave ***diffraction*** grating; ***X*** -ray microscopy; optical tweezers; laser-Doppler measurement; nonlinear magneto-optics, optical bistability, parametric amplification; quasi phase matching; induced Kerr effects; photorefractive crystals and fibers; laser sensing; fiber-optic Bragg gratings; optical recognition; lasers in ophthalmology, confocal microscopy, biomedical applications; optical remote sensing; optoelectronic modular integration; fiber optical sensor system; optics and photography.
CC A0130C Conference proceedings; A4250 Quantum optics; A4270Q Photonic bandgap materials; A7820P Photonic band gap (condensed matter); A8630J Photoelectric conversion; solar cells and arrays; A4255P Lasing action in semiconductors; A4255R Lasing action in other solids; A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A4280W Ultrafast optical techniques; A4180 Particle beams and particle optics;

A3280P Optical cooling of atoms; trapping; A3380P Optical cooling of molecules; trapping; A4250V Mechanical effects of light; A4280F Gratings, echelles; A4281 Fibre optics and fibre waveguides; A4260D Laser resonators and cavities; A4265 Nonlinear optics; A4272 Optical sources and standards; A4280D Optical monochromators; A5270 Plasma diagnostic techniques and instrumentation; A0785 X-ray, gamma-ray instruments and techniques; A4262E Metrological applications of lasers; A4281P Fibre optic sensors; fibre gyros; A4230S Pattern recognition; A8760F Optical and laser radiation (medical uses); A0760P Optical microscopy; B0100 General electrical engineering topics; B6260 Optical communication; B8420 Solar cells and arrays; B4320J Semiconductor lasers; B4320G Solid lasers; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning; B4250 Photoelectric devices; B4125 Fibre optics; B6150P Communication network design, planning and routing; B6260F Optical fibre networks; B4320L Laser resonators and cavities; B6260M Multiplexing and switching in optical communication; B6120D Cryptography; B4340 Nonlinear optics and devices; B4360E Metrological applications of lasers; B7320E Velocity, acceleration and rotation measurement; B7230E Fibre optic sensors; B6135E Image recognition; B4360H Biological and medical applications of lasers; B7510J Optical and laser radiation (biomedical imaging/measurement)

CT BRAGG GRATINGS; DIFFRACTION GRATINGS; DIFFRACTIVE OPTICAL ELEMENTS; DOPPLER MEASUREMENT; FIBRE OPTIC SENSORS; HIGH-SPEED OPTICAL TECHNIQUES; IMAGE RECOGNITION; ***LASER*** APPLICATIONS IN ***MEDICINE*** ; LASER CAVITY RESONATORS; LASER VELOCIMETRY; LIGHT INTERFERENCE; LIGHT SOURCES; MAGNETO-OPTICAL EFFECTS; MONOCHROMATORS; NONLINEAR OPTICS; OPTICAL BISTABILITY; OPTICAL FIBRE COMMUNICATION; OPTICAL FIBRE NETWORKS; OPTICAL KERR EFFECT; OPTICAL MICROSCOPY; OPTICAL PARAMETRIC AMPLIFIERS; OPTICAL PHASE MATCHING; OPTICAL SENSORS; OPTOELECTRONIC DEVICES; PARTICLE OPTICS; PHOTOGRAPHY; PHOTOLUMINESCENCE; PHOTONIC BAND GAP; PHOTOREFRACTIVE EFFECT; PHOTOREFRACTIVE MATERIALS; PHOTOVOLTAIC ***CELLS*** ; PLASMA DIAGNOSTICS; QUANTUM CRYPTOGRAPHY; QUANTUM OPTICS; RADIATION PRESSURE; REMOTE SENSING; SEMICONDUCTOR LASERS; SOLAR ***CELLS*** ; SOLID LASERS; TELECOMMUNICATION NETWORK ROUTING; TIME RESOLVED SPECTRA; WAVELENGTH DIVISION MULTIPLEXING; X-RAY MICROSCOPY

ST parametric amplification; optical communications; photonic crystal fibers; semiconductor light emitters; ***solar cells*** ; laser diodes; diffractive optics; ultrafast all-solid-state lasers; photon-atom entanglement; quantum memory; time-resolved microphotoluminescence; photovoltaic devices; molecule reflection; atom reflection; moving media; light; Bragg gratings; wavelength routers; bidirectional WDM multifiber ring network; complex photonic microsystems; compact external-cavity diode laser; optical quantum cryptography; delayed interference; nonlinear optics; green light generation; blue light generation; UV light generation; high aperture monochromator; concave diffraction grating; X-ray microscopy; optical tweezers; laser-Doppler measurement; nonlinear magneto-optics; optical bistability; quasi phase matching; induced Kerr effects; photorefractive crystals; photorefractive fibers; laser sensing; fiber-optic Bragg gratings; optical recognition; lasers; ophthalmology; confocal microscopy; biomedical applications; optical remote sensing; optoelectronic modular integration; fiber optical sensor system; optics; photography

L10 ANSWER 27 OF 38 INSPEC (C) 2006 IEE on STN
AN 1998:5989085 INSPEC DN A9818-8235-002
TI Synthesis, structural and conformational analysis and chemical properties of phthalocyaninatometal complexes.
AU Sasa, N.; Okada, K. (Res. & Dev. Center, Ricoh Co. Ltd., Yokohama, Japan); Nakamura, K.; Okada, S.
SO Journal of Molecular Structure (18 May 1998) vol.446, no.3, p.163-78. 32 refs.
Doc. No.: S0022-2860(97)00309-8
Published by: Elsevier
Price: CCCC 0022-2860/98/$19.00
CODEN: JMOSB4 ISSN: 0022-2860
SICI: 0022-2860(19980518)446:3L.163:SSCA;1-K
DT Journal
TC Experimental
CY Netherlands
LA English
AB Syntheses of the phthalocyaninatometal complexes were performed and the crystal and molecular structures were determined by single-crystal ***X*** -ray ***diffraction*** analysis. The general formulas of

these Pc dye compounds are -[Si(Pc)OSiR21R2SiR21O]n- and Si(Pc)(OSiR1R2IR3)2: -[Si(Pc)OSi(CH3)2(CH2)7Si(CH3)2O]n- (1), Si(Pc)[OSi(C6H13)3]2 (2) Si(Pc)[OSiC8H17(OH3)2]2 (3) and Si(Pc)[OSiCH3C12H25CH3]2 (4). These Pc dye derivatives were prepared by refluxing a mixture of Si(Pc)(OH)2 and SiR1R2R3Cl in pyridine, followed by cooling the mixture slowly and then drying the resulting precipitates. For 1-3, the Pc skeleton and the oxo-bridged substituents are coplanar. The dihedral angle between the mean planes of the Pc skeleton and two single-atom Sime[Sime-O-Sipc-O-Sime] is nearly at right angles. The Sipc-O bonds are shorter than the Sipc-N bonds and the Sime-O bonds are shorter than the Sipc-O bonds. For 1, the Pc microcyclic rings are related by a center of symmetry at the center of the O1-Si1-O2 bonds. The chemical formula of a monomer is C43H42N8O2Si3 (C25H28N5O2Si3 in crystallographic symmetry) and the polymer is built up by the addition polymerization of the monomers. The polymer chain is constructed at the siloxy group along the a axis. Two hexyl groups of two siloxy side groups for 2 have the same direction, but one hexyl extends in the opposite direction: For 3, two methyl groups and one octyl group extend in the opposite direction. We applied Pc dyes 2-4, mixed with a polymer for the control of the aggregation state to CD-R and DVD-R recording systems. The aggregation state of the recording layer is controlled by choosing the set of axial substituents R1-R3. The interactions of Pc dyes with polymers are dependant upon the ***length*** of axial substituents. We achieved the best writing contrast and the highest stability with the mixed PC dye 4. The conformation of axial substituents is very important for the ability of the dye aggregation and the capability to control the aggregation state.

CC A8235 Polymer reactions and polymerization; A3520B General molecular conformation and symmetry; stereochemistry; A8260 Chemical thermodynamics; A8230N Association, addition, and insertion

CT AGGREGATION; ASSOCIATION; CRYSTAL STRUCTURE; MOLECULAR CONFIGURATIONS; ORGANOMETALLIC COMPOUNDS; POLYMERISATION; ***X*** -RAY ***DIFFRACTION***

ST conformational analysis; chemical properties; phthalocyaninatometal complexes; crystal structure; molecular structure; ***single-crystal*** *** X-ray diffraction analysis*** ; Pc dye compounds; refluxing; cooling; mixture; drying; oxo-bridged substituents; center of symmetry; crystallographic symmetry; addition polymerization; hexyl groups; siloxy side groups; methyl groups; octyl group; aggregation state; CD-R recording system; DVD-R recording systems; ***axial substituent lengths*** ; writing contrast; stability; dye aggregation; phthalocyaninato metal complexes; ***optical disk***

ET O*Si; OSi; O cp; cp; Si cp; Si; C*H*O*Si; C sy 4; sy 4; H sy 4; O sy 4; Si sy 4; OSi(CH3)2(CH2)7Si(CH3)2O]n; C cp; H cp; C*H; (C6H13)3]2; C*H*O; C8H17(OH3)2]2; CH3C12H25CH3]2; H*O; (OH)2; O sy 2; sy 2; Si sy 2; Sime[Sime; Sime[Sime-O-Sipc-O-Sime]; Sipc-O; N*Si; Sipc-N; Sime-O; O1-Si1-O2; C*H*N*O*Si; C43H42N8O2Si3; N cp; C25H28N5O2Si3

L10 ANSWER 28 OF 38 INSPEC (C) 2006 IEE on STN

AN 1998:5944509 INSPEC DN A9814-0735-002

TI Temperature and pressure distribution in the laser-heated diamond-anvil ***cell*** .

AU Dewaele, A.; Fiquet, G.; Gillet, P. (Ecole Normale Superieure de Lyon, France)

SO Review of Scientific Instruments (June 1998) vol.69, no.6, p.2421-6. 29 refs.
Doc. No.: S0034-6748(98)03406-6
Published by: AIP
Price: CCCC 0034-6748/98/69(6)/2421(6)/$15.00
CODEN: RSINAK ISSN: 0034-6748
SICI: 0034-6748(199806)69:6L.2421:TPDL;1-3

DT Journal

TC Theoretical

CY United States

LA English

AB Thermomechanical modeling of a sample assembly (sample plus pressure transmitting ***medium***) in a ***laser*** -heated diamond-anvil ***cell*** (LHDAC) is presented. Finite elements numerical calculation afforded to obtain the temperature distribution and the induced thermal pressure field, showing that a non-negligible pressure increase (called thermal pressure) occurs in the laser-heated zone. When argon is used as a pressure transmitting medium, thermal pressure can reach 20%-30% of the

normal pressure measured in the cold zone. This modeling is supported by experimental studies. It is shown that discrepancies between diamond-anvil ***cell*** and large volume press experiments on the coesite to stishovite transition are quantitatively explained by the thermal pressure effect. Moreover, thermal pressure also explains the anomalous low thermal expansion coefficient obtained by ***x*** -ray ***diffraction*** studies in LHDAC.

CC A0735 High pressure production and techniques; A4260K Laser beam applications; A0260 Numerical approximation and analysis

CT FINITE ELEMENT ANALYSIS; HIGH-PRESSURE TECHNIQUES; LASER BEAM APPLICATIONS; TEMPERATURE DISTRIBUTION

ST temperature distribution; pressure distribution; ***laser-heated diamond*** *** anvil cell*** ; thermomechanical model; finite element method; thermal pressure; coesite to stishovite transition; thermal expansion coefficient; ***X-ray diffraction*** ; Ar

CHI Ar el

ET Ar

L10 ANSWER 29 OF 38 INSPEC (C) 2006 FIZ KARLSRUHE on STN

AN 1996:5271572 INSPEC DN A9612-8110F-013

TI Potential ***laser*** gain ***media*** with the stoichiometric formula RETiNbO6.

AU Qi, X.; Illingworth, R.; Gallagher, H.G.; Han, T.P.J.; Henderson, B. (Dept. of Phys. & Appl. Phys., Strathclyde Univ., Glasgow, UK)

SO Journal of Crystal Growth (March 1996) vol.160, no.1-2, p.111-18. 8 refs.
Published by: Elsevier
Price: CCCC 0022-0248/96/$15.00
CODEN: JCRGAE ISSN: 0022-0248
SICI: 0022-0248(199603)160:1/2L.111:PLGM;1-5

DT Journal

TC Experimental

CY Netherlands

LA English

AB The laser heated pedestal growth (LHPG) technique has been used to grow miniature crystals of the mixed niobates, RETiNbO6 with RE=Nd, Pr and Er, having typical dimensions of 0.5 mm diameter and 10 mm in ***length*** . The Nd and Pr compounds grow in the aeschynite structure, whereas the Er compound grows with the euxenite structure, The crystals grown by the LHPG technique were characterised by measurement of their ***X*** -ray ***diffraction*** patterns and optical absorption and photoluminescence spectra. The latter show very high absorption coefficients for the rare earth ions and strong luminescence signals. Brief reports are presented of these spectra, and discussed in terms of the potential of RETiNbO6 single crystals as ***laser*** gain ***media*** .

CC A8110F Crystal growth from melt; A6160 Specific structure of inorganic compounds; A6150C Physics of crystal growth; A7820D Optical constants and parameters; A4255P Lasing action in semiconductors; A7840H Visible and ultraviolet spectra of other nonmetals; A7855H Photoluminescence in other inorganic materials; A7170C Crystal and ligand fields

CT ABSORPTION COEFFICIENTS; CRYSTAL FIELD INTERACTIONS; CRYSTAL GROWTH FROM MELT; CRYSTAL STRUCTURE; ERBIUM COMPOUNDS; LASER MATERIALS PROCESSING; NEODYMIUM COMPOUNDS; PHOTOLUMINESCENCE; PRASEODYMIUM COMPOUNDS; SOLID LASERS; TITANIUM COMPOUNDS; VISIBLE SPECTRA; ***X*** -RAY ***DIFFRACTION***

ST ***laser gain media*** ; laser heated pedestal growth; mixed niobates; aeschynite structure; euxenite structure; ***X ray diffraction*** ; crystal growth from melt; optical absorption; photoluminescence spectra; absorption coefficients; visible spectra; 77 K; 300 K; 420 to 1030 nm; NdTiNbO6; PrTiNbO6; ErTiNbO6

CHI NdTiNbO6 ss, Nb ss, Nd ss, O6 ss, Ti ss, O ss; PrTiNbO6 ss, Nb ss, O6 ss, Pr ss, Ti ss, O ss; ErTiNbO6 ss, Er ss, Nb ss, O6 ss, Ti ss, O ss

PHP temperature 7.7E+01 K; temperature 3.0E+02 K; wavelength 4.2E-07 to 1.03E-06 m

ET Nd; Pr; Er; Nb*Nd*O*Ti; Nb sy 4; sy 4; Nd sy 4; O sy 4; Ti sy 4; NdTiNbO6; Nd cp; cp; Ti cp; Nb cp; O cp; Nb*O*Pr*Ti; Pr sy 4; PrTiNbO6; Pr cp; Er*Nb*O*Ti; Er sy 4; ErTiNbO6; Er cp; NdTiNbO; Nb; O; Ti; PrTiNbO; ErTiNbO

L10 ANSWER 30 OF 38 INSPEC (C) 2006 IEE on STN

AN 1995:4989617 INSPEC DN A9515-6130-011

TI Pretilt angle measurements on smectic A ***cells*** with chevron and tilted bookshelf layer structures.

AU Bonvent, J.J.; van Haaren, J.A.M.M.; Cnossen, G.; Verhulst, A.G.H.; van

der Sluis, P. (Philips Res. Lab., Eindhoven, Netherlands)
SO Liquid Crystals (May 1995) vol.18, no.5, p.723-31. 29 refs.
Price: CCCC 0267-8292/95/$10.00
CODEN: LICRE6 ISSN: 0267-8292
DT Journal
TC Experimental
CY United Kingdom
LA English
AB We have measured the pretilt angle induced by rubbed polymer films in a smectic A and in a nematic liquid crystalline ***medium*** using an ***optical*** phase retardation method. The pretilt angle was found to depend on the liquid crystalline phase (smectic A versus nematic) and on the smectic layer structure (chevron versus tilted-bookshelf). The occurrence of the different smectic layer structures was verified by ***X*** -ray ***diffraction*** measurements. The effect of the applied rubbing energy on the pretilt angle obtained is measured.
CC A6130E Experimental determinations of smectic, nematic, cholesteric, and lyotropic structures; A6810C Fluid surface energy (surface tension, interface tension, angle of contact, etc.); A6840 Surface energy of solids; thermodynamic properties
CT MOLECULAR ORIENTATION; NEMATIC LIQUID CRYSTALS; POLYMER FILMS; SMECTIC LIQUID CRYSTALS; SURFACE ENERGY; ***X*** -RAY ***DIFFRACTION***
ST pretilt angle measurements; ***smectic A cells*** ; chevron structures; tilted bookshelf layer structures; rubbed polymer films; nematic liquid crystalline medium; optical phase retardation method; ***X-ray*** *** diffraction*** ; applied rubbing energy

L10 ANSWER 31 OF 38 INSPEC (C) 2006 IEE on STN
AN 1995:4843110 INSPEC DN A9502-7570-020
TI The relationship between the microstructure and magnetic properties of sputtered Co/Pt multilayer films.
AU Kim, Y.H.; Petford-Long, A.K.; Jakubovics, J.P. (Dept. of Mater., Oxford Univ., UK)
SO Journal of Applied Physics (15 Nov. 1994) vol.76, no.10, pt.2, p.6099. 0 refs.
Price: CCCC 0021-8979/94/76(10)/6099/1/$6.00
CODEN: JAPIAU ISSN: 0021-8979
Conference: Sixth Joint Magnetism and Magnetic Materials - International Magnetics Conference. Albuquerque, NM, USA, 20-23 June 1994
Sponsor(s): IEEE
DT Conference Article; Journal
TC Experimental
CY United States
LA English
AB Summary form only given, as follows. Co/Pd multilayer films (MLFs) are of interest because of their potential application as high-density magneto- ***optical*** recording ***media*** . Co/Pd MLFs with varying Co and Pd layer thicknesses were grown by sputter-deposition onto (100) Si wafers. ***X*** -ray ***diffraction*** and high resolution electron microscopy were used to study the microstructure of the films, and Lorentz microscopy was used to analyze their magnetic domain structure. The films show an fcc crystal structure with a compromised lattice parameter and a strong (111) crystallographic texture in the growth direction. The compromised interplanar ***spacing*** parallel to the surface increased with decreasing thickness ratio (tCo/tPd), and the columnar grain size decreased with increasing Pd layer thickness. Films with tCo=0.35 nm and tPd=2.8 nm (columnar grain diameter 20 nm) showed promising magnetic properties, namely a high perpendicular magnetic anisotropy (1.85*105 J m-3), with a perpendicular coercivity of 98.7 kA m-1, a perpendicular remanence ratio of 99%, and a perpendicular coercivity ratio of 88%. The magnetic domains were uniform and of a narrow stripe type, confirming the perpendicular easy axis of magnetization. The Curie temperature was found to be about 430 degrees C. Films of pure Co and Pd, grown for comparison, also showed columnar grain structure with grain-sizes of the same order as those seen in the MLFs. In addition the Pd films showed a (111) textured fcc structure.
CC A7570F Magnetic ordering in multilayers; A7550R Magnetism in interface structures; A8115C Deposition by sputtering; A6865 Layer structures, intercalation compounds and superlattices: growth, structure and nonelectronic properties; A7570K Domain structure in magnetic films (magnetic bubbles); A8130B Phase diagrams of metals and alloys; A7530G Magnetic anisotropy; A7560E Magnetization curves, hysteresis, Barkhausen

and related effects; A7560G High coercivity magnetic materials; A7530K Magnetic phase boundaries
CT COBALT; COERCIVE FORCE; CURIE TEMPERATURE; ELECTRON MICROSCOPY; GRAIN SIZE; MAGNETIC DOMAINS; MAGNETIC MULTILAYERS; PERPENDICULAR MAGNETIC ANISOTROPY; PLATINUM; REMANENCE; SPUTTERED COATINGS; ***X*** -RAY ***DIFFRACTION***
ST sputtered multilayer films; microstructure; ***high-density*** *** magneto-optical recording media*** ; (100) Si wafers; ***X-ray*** *** diffraction*** ; high resolution electron microscopy; Lorentz microscopy; magnetic domain structure; FCC crystal structure; lattice parameter; crystallographic texture; ***compromised interplanar spacing*** ; columnar grain size; layer thickness; perpendicular magnetic anisotropy; perpendicular coercivity; perpendicular remanence; Curie temperature; Co-Pt
CHI Co-Pt int, Co int, Pt int, Co el, Pt el
ET Co; Pd; Si; J; C; Co*Pt; Co sy 2; sy 2; Pt sy 2; Co-Pt; Pt

L10 ANSWER 32 OF 38 INSPEC (C) 2006 IEE on STN
AN 1992:4142254 INSPEC DN A9211-6848-009
TI Interface atomic structure determination of an Al(001)/GaAs(001) bicrystal using higher-order Laue zone analysis and atom location by channelling-enhanced microanalysis.
AU Al-Khafaji, M.A.; Cherns, D.; Rossouw, C.J.; Woolf, D.A. (H.H. Wills Phys. Lab., Bristol Univ., UK)
SO Philosophical Magazine B (Physics of Condensed Matter, Electronic, Optical and Magnetic Properties) (March 1992) vol.65, no.3, p.385-99. 14 refs.
Price: CCCC 0141-8637/92/$3.00
CODEN: PMABDJ ISSN: 0141-8637
DT Journal
TC Experimental
CY United Kingdom
LA English
AB The interface atomic structure of a Al(001)/GaAs(001) bicrystal with a high density of misfit dislocations is derived by two dynamical diffraction techniques. Firstly, analysis of contrast in higher-order Laue zone (HOLZ) ***discs*** yields ***information*** on excitation amplitudes of successive Bloch wave states associated with the fast electron wavefunction in the underlying GaAs layer, and how these vary with rigid shift and position between misfit dislocations. Secondly, characteristic X-ray emission is recorded in energy-dispersive ***X*** -ray spectra under varying 220 systematic row ***diffraction*** conditions, and changes in emission rates from Al, Ga and As are monitored as a function of orientation (similar to an atom location by channelling-enhanced microanalysis (ALCHEMI)). The authors base their analysis on changes in Bloch wave branch amplitudes induced in GaAs with a rigid shift of the top Al layer, together with additional displacements due to a periodic array of interfacial 1/4(110) dislocations. The influence of the interfacial dislocation network on both HOLZ and the ALCHEMI results is found to be small for the observed dislocation ***spacing*** of 170 AA. However, misfit dislocations may provide a strong perturbation and render theory based on an undislocated interface invalid for ***spacings*** less than 50 AA. Both the HOLZ and the ALCHEMI results support the rigid-shift model which projects Al atoms onto open channels in the GaAs(001) structure, in agreement with previous observations.
CC A6848 Solid-solid interfaces; A6180M Channelling, blocking and energy loss of particles
CT ALUMINIUM; BICRYSTALS; CHANNELLING; DISLOCATIONS; ELECTRON DIFFRACTION EXAMINATION OF MATERIALS; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; INTERFACE STRUCTURE; PERTURBATION THEORY; SEMICONDUCTOR-METAL BOUNDARIES
ST perturbation theory; semiconductor; Al(001)/GaAs(001) bicrystal; higher-order Laue zone; atom location; channelling-enhanced microanalysis; interface atomic structure; misfit dislocations; dynamical diffraction; Bloch wave states; fast electron wavefunction; X-ray emission; energy-dispersive X-ray spectra; interfacial dislocation network; ALCHEMI; rigid-shift model; Al-GaAs
CHI Al-GaAs int, GaAs int, Al int, As int, Ga int, GaAs bin, As bin, Ga bin, Al el
ET Al; As*Ga; As sy 2; sy 2; Ga sy 2; GaAs; Ga cp; cp; As cp; Ga; As; V; Al*As*Ga; Al sy 3; sy 3; As sy 3; Ga sy 3; Al-GaAs

L10 ANSWER 33 OF 38 INSPEC (C) 2006 IEE on STN

AN   1991:3951423 INSPEC   DN A91111272; B91054922
TI   Influence of production process on film characteristics of silicon
     nitride.
AU   Kirino, F.; Mutou, A.; Ohta, N. (Central Res. Lab., Hitachi Ltd., Tokyo,
     Japan)
SO   Journal of the Japan Institute of Metals (June 1991) vol.55, no.6,
     p.706-14. 7 refs.
     CODEN: NIKGAV ISSN: 0021-4876
DT   Journal
TC   Experimental
CY   Japan
LA   Japanese
AB   SiNx films are widely used as protection and Kerr enhancement films for
     magneto- ***optical***   ***disks*** . The characteristics of the SiNx
     films, produced by reaction sputtering using the silicon target, are
     studied by FT-IR, Auger electron spectroscopy, a microscope, an   ***X***
     -ray ***diffraction*** meter, and the ESCA method. The film, produced
     by a pass-by type sputtering apparatus, a low sputtering gas pressure, and
     a short ***length*** between target and substrate, does not contain
     oxygen. The reaction sputtering method gives a little influence on the
     sputtering condition. Oxygen is not contained in the film using this
     production condition. The magneto-optical recording film is corroded, if
     the SiNx film containing oxygen is used as a Kerr enhancement and
     protection film. Nitrogen possesses one bonding order, as an independent
     of production process, and silicon, depended on the process, possesses
     some state. The surface of this films is flat and amorphous. The magneto-
     optical   ***disk*** using this SiNx films has no problems such
     as the increase delta of the noise level.
CC   A8115C Deposition by sputtering; A7820L Magneto-optical effects; A6855
     Thin film growth, structure, and epitaxy; A8280P Electron spectroscopy for
     chemical analysis (photoelectron, Auger spectroscopy, etc.); A7960E
     Semiconductors and insulators; A7830L Disordered solids; A6140 Amorphous
     and polymeric materials; A7865J Nonmetals; B0520F Vapour deposition;
     B3120B Magnetic tapes, discs and recording heads; B4160 Magneto-optical
     devices; B4120 Optical storage and retrieval
CT   AMORPHOUS STATE; AUGER EFFECT; CERAMICS; FOURIER TRANSFORM SPECTRA;
     INFRARED SPECTRA OF INORGANIC SOLIDS; KERR MAGNETO-OPTICAL EFFECT;
     MAGNETO-OPTICAL RECORDING; SILICON COMPOUNDS; SPUTTER DEPOSITION;
     SPUTTERED COATINGS;   ***X*** -RAY   ***DIFFRACTION***   EXAMINATION OF
     MATERIALS; X-RAY PHOTOELECTRON SPECTRA
ST   amorphous film; production process; film characteristics; Kerr enhancement
     films;   ***magneto-optical disks***   ; reaction sputtering; FT-IR; Auger
     electron spectroscopy;   ***X-ray diffraction meter***   ; ESCA method;
     pass-by type sputtering apparatus; magneto-optical recording film;
     protection film; noise level; SiNx films
CHI SiN bin, Si bin, N bin
ET   N*Si; SiNx; Si cp; cp; N cp; SiN; Si

L10 ANSWER 34 OF 38 INSPEC (C) 2006 IEE on STN
AN   1989:3271582 INSPEC   DN A89001183; B89002746
TI   Stability of Te-Cu amorphous alloy thin films for optical recording.
AU   Carcia, P.F. (Central Res. & Dev. Dept., E.I. du Pont de Nemours & Co.
     Inc., Wilmington, DE, USA); Kalk, F.D.; Bierstedt, P.E.; Ferretti, A.;
     Jones, G.A.; Swartzfager, D.G.
SO   Journal of Applied Physics (15 Aug. 1988) vol.64, no.4, p.1671-8. 13 refs.
     Price: CCCC 0021-8979/88/161671-08$02.40
     CODEN: JAPIAU ISSN: 0021-8979
DT   Journal
TC   Experimental
CY   United States
LA   English
AB   The authors have studied the structure and optical stability of Te-Cu thin
     film alloy candidates for write-once optical recording. Films prepared by
     RF diode sputtering with 20-50 at.% Cu are amorphous, as-sputtered. One of
     these, Te65Cu35, has a relatively high crystallization temperature (150
     degrees C), as determined by   ***X*** -ray   ***diffraction*** . Near
     the eutectic composition (approximately 29 at.% Cu), alloy films have
     stable optical properties after accelerated aging at 60 degrees C and 85%
     relative humidity. The mechanism for film stability near the eutectic was
     studied by X-ray photoelectron spectroscopy and depth profiling using ion
     scattering spectroscopy. They found that a Cu-enriched surface oxide,
     formed at ambient conditions, passivates the film and is responsible for

its subsequent stability after accelerated aging. They also demonstrated that a 14 in. diam, multilayer ***optical*** ***disk*** with a Te65Cu35 recording ***medium*** exhibits excellent linearity for 3 and 8 MHz pulses, good written pulse ***length*** stability, and high signal-to-noise ratio. Thus, a Te-Cu recording medium can effectively use run- ***length*** -limited codes, which allow very high data storage capacity and data transfer rates.

CC A4270F Other optical materials; A4230N Optical storage and retrieval; B4120 Optical storage and retrieval; B4110 Optical materials

CT AGEING; COPPER ALLOYS; CRYSTALLISATION; ION-SURFACE IMPACT; OPTICAL FILMS; OPTICAL STORAGE; SPUTTERED COATINGS; TELLURIUM ALLOYS; ***X*** -RAY ***DIFFRACTION*** EXAMINATION OF MATERIALS; X-RAY PHOTOELECTRON SPECTRA

ST passivation; amorphous alloy thin films; structure; optical stability; write-once optical recording; RF diode sputtering; crystallization temperature; ***X-ray diffraction*** ; eutectic composition; aging; humidity; X-ray photoelectron spectroscopy; depth profiling; ion scattering spectroscopy; surface oxide; ***multilayer optical disk*** ; linearity; ***pulse length stability*** ; signal-to-noise ratio; Te65Cu35

CHI Te65Cu35 bin, Cu35 bin, Te65 bin, Cu bin, Te bin

ET Cu*Te; Cu sy 2; sy 2; Te sy 2; Te-Cu; Cu; Te65Cu35; Te cp; cp; Cu cp; C; Te65Cu; Te

L10 ANSWER 35 OF 38 INSPEC (C) 2006 IEE on STN

AN 1988:3230475 INSPEC DN A88128076; B88065140; C88057551

TI Diffraction modeling of ***optical*** path for magneto- ***optical*** ***disk*** systems.

AU Mansuripur, M.; Pons, C. (Coll. of Eng., Boston Univ., MA, USA)

SO Proceedings of the SPIE - The International Society for Optical Engineering (1988) vol.899, p.56-60. 3 refs.
CODEN: PSISDG ISSN: 0277-786X
Conference: Optical Storage Technology and Applications. Los Angeles, CA, USA, 12-15 Jan 1988
Sponsor(s): SPIE

DT Conference Article; Journal

TC Theoretical

CY United States

LA English

AB The authors present some results of a new model for vector diffraction calculations based on multiple fast Fourier transforms (FFTs) and introduce a new focus error detection scheme using a specially designed 'ring lens' and a four- ***cell*** ' Phi detector. The basic ingredients of their approach to vector diffraction were outlined in a previous paper (1986). The starting point in this approach is the decomposition of the incident distribution into plane waves. Next they determine the polarization state of individual plane waves from a knowledge of the incident polarization and the direction of propagation of the diffracted beams, and superimpose the corresponding components of the diffracted beams at the observation plane which is separated from the plane of incidence by a distance z0 along the Z axis. Assuming an incident beam which is linearly polarized along the ***X*** axis, calculations of near field (Fresnel) ***diffraction*** patterns require a total of four FFTs: one FFT on the incident distribution and a second FFT for each of three components of polarization at the observation plane.

CC A4210D Wave-front and ray tracing; A4210H Diffraction and scattering from extended bodies; A4230K Fourier transform optics; A4230N Optical storage and retrieval; B4120 Optical storage and retrieval; B4160 Magneto-optical devices; C5320K Optical storage

CT FOURIER TRANSFORM OPTICS; GEOMETRICAL OPTICS; LIGHT DIFFRACTION; MAGNETO-OPTICAL DEVICES; ***OPTICAL*** ***DISC*** STORAGE

ST Fresnel diffraction patterns; diffraction modelling; optical path; ***magneto-optical disk systems*** ; vector diffraction calculations; multiple fast Fourier transforms; focus error detection scheme; ring lens; Phi detector; plane waves; polarization state; diffracted beams

L10 ANSWER 36 OF 38 INSPEC (C) 2006 IEE on STN

AN 1984:2228412 INSPEC DN A84044972

TI Medium range order in amorphous As-Se systems.

AU Mori, T.; Arai, T. (Inst. of Appl. Phys., Univ. of Tsukuba, Ibaraki, Japan)

SO Journal of Non-Crystalline Solids (Dec. 1983) vol.59-60, pt.2, p.867-70. 1 refs.

Price: CCCC 0022-3093/83/0000-0000/$03.00
CODEN: JNCSBJ ISSN: 0022-3093
Conference: Proceedings of the Tenth International Conference on Amorphous and Liquid Semiconductors. Tokyo, Japan, 22-26 Aug 1983
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB The effects of photons and As on the crystallization of a-Se were investigated and the structure factors of a-AsxSe1- ***x*** (0<or=*<or=0.36) systems were measured by neutron ***diffraction*** . The authors obtained the ***information*** about the ***medium*** range order (MRO) in these systems. The ***length*** of the MRO in these systems is 10 approximately 15 A.
CC A6140D Glasses
CT ARSENIC COMPOUNDS; CHALCOGENIDE GLASSES; CRYSTALLISATION; NEUTRON DIFFRACTION EXAMINATION OF MATERIALS; NONCRYSTALLINE STATE STRUCTURE
ST amorphous Se; chalcogenide glass; semiconductor; amorphous AsxSe1-x; amorphous As-Se systems; crystallization; structure factors; neutron diffraction; medium range order
ET As*Se; As sy 2; sy 2; Se sy 2; As-Se; As; Se; AsxSe1-x; As cp; cp; Se cp

L10 ANSWER 37 OF 38 INSPEC (C) 2006 IEE on STN
AN 1980:1598901 INSPEC DN A80105437
TI Annual review of biophysics and bioengineering.
AU Editor(s): Mullins, L.J.; Hagins, W.A.; Newton, C.; Weber, G.
SO Palo Alto, CA, USA: Annual Reviews Inc, 1980. v+643 pp.
ISBN: 0-8243-1809-9
DT Book
TC General Review
CY United States
LA English
AB The book consists of 19 chapters dealing with: solution X-ray scattering; photoacoustic spectroscopy; stimulus-response coupling in gland ***cells*** ; cardiac ***X*** -ray ***diffraction*** ; optical activity of nucleic acids and their aggregates; modulation of axonal tree impulse conduction; transfer RNA in solution; nerve growth factor; structure of proteins involved in active membrane transport; magnetic circular dichroism of biomolecules radioimmunoassay; automatic computer reconstruction of neuronal structures; biophysical applications of NMR; machine assisted pattern classification; slow synaptic responses; lipid vesicles; flow cytometry; biomathematics in oncology; ***medical*** ***information*** systems.
CC A0130E Monographs, and collections; A0130R Reviews and tutorial papers; resource letters; A8700 Biophysics, medical physics, and biomedical engineering; A8770 Biomedical engineering; A8780 Biophysical instrumentation and techniques
CT BIOLOGICAL TECHNIQUES AND INSTRUMENTS; BIOMEDICAL ENGINEERING; BIOPHYSICS; REVIEWS
ST solution X-ray scattering; photoacoustic spectroscopy; ***gland cells*** ; ***cardiac X-ray diffraction*** ; optical activity; nucleic acids; axonal tree impulse conduction; transfer RNA; nerve growth factor; active membrane transport; magnetic circular dichroism; biomolecules; radioimmunoassay; automatic computer reconstruction; neuronal structures; NMR; machine assisted pattern classification; slow synaptic responses; lipid vesicles; flow cytometry; ***medical information systems*** ; biophysics; bioengineering; protein structure; stimulus response coupling; mathematical oncology

L10 ANSWER 38 OF 38 INSPEC (C) 2006 IEE on STN
AN 1980:1478269 INSPEC DN A80030660
TI Quasi-hexagonal molecular packing in collagen fibrils.
AU Hulmes, D.J.S.; Miller, A. (European Molecular Biology Lab., CENG, Grenoble, France)
SO Nature (20-27 Dec. 1979) vol.282, no.5741, p.878-80. 39 refs.
CODEN: NATUAS ISSN: 0028-0836
DT Journal
TC Experimental
CY United Kingdom
LA English
AB Collagen molecules in native 66.8 nm (D) periodic fibrils are widely believed to be assembled into discrete, rope-like substructures, or

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    microfibrils. Several types of microfibril have been proposed (2,4,5,7-
    and 8-standed), mainly on the basis of   ***information***   contained in
    the   ***medium***   angle   ***X***  -ray   ***diffraction***   patterns
    of native tendon fibres. The authors describe a re-interpretation of the
    X-ray data which leads to a new model for the crystalline regions of the
    fibril, based on quasi-hexagonal molecular packing without microfibrillar
    sub-structures, and hence having the character of a molecular crystal.
CC  A3620C Conformation (statistics and dynamics); A6165 Specific structure of
    organic compounds; A8715B Structure, configuration, conformation, and
    active sites at the biomolecular level
CT  CRYSTAL ATOMIC STRUCTURE OF ORGANIC COMPOUNDS; MACROMOLECULAR
    CONFIGURATIONS; MOLECULAR BIOPHYSICS; PROTEINS
ST  collagen fibrils; periodic fibrils; microfibrils;   ***X-ray diffraction***
  ***     patterns of native tendon fibres***  ; X-ray data; molecular crystal;
    quasi hexagonal molecular packing; rat tail tendon;   ***basal unit cell***
  ***     parameters***  ; collagen fibril structure; Bragg reflections


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     FILE 'CAPLUS, INSPEC' ENTERED AT 08:34:36 ON 03 FEB 2006
L1          95839 S ((OPTICAL OR LASER OR INFORMATION)(5A)(MED? OR DISK OR DISC))
L2             97 S L1 AND HEXAGONAL
L3              2 S L2 AND A7
L4             95 S L2 NOT L3
L5            410 S L1 AND (DIFFRACTION(10A)(X OR XRAY))
L6            361 S (C OR A) AND L5
L7             85 S (SB OR ANTIMONY) AND L5
L8             75 S (TE OR TELLURIUM) AND L5
L9              9 S L5 AND SPACING
L10            38 S L5 AND (SPACING OR LENGTH OR CELL)

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